

GEOTECHNICAL SUBSURFACE INVESTIGATION REPORT

Montgomery County Task Order #13 Subtask B Phase III (Franklin Knolls) Montgomery County, Maryland



PREPARED FOR:

**McCormick Taylor
509 South Exeter Street, 4th Floor
Baltimore, Maryland 21202**

PREPARED BY:



**AB CONSULTANTS, INC.
9450 ANNAPOLIS ROAD
LANHAM, MARYLAND 20706**

January 15, 2013



January 15, 2013

Attn: Ms. Kimi Schmidt
McCormick Taylor
509 South Exeter Street, 4th Floor
Baltimore, Maryland 21202

**REF: Report of Subsurface Investigation and Studies
Montgomery County Task Order #13 Subtask B Phase III,
Roadway LID - Franklin Knolls
Montgomery County, Maryland
AB Job No. 10-368.01**

Dear Ms. Schmidt:

AB Consultants, Inc. (ABC) is pleased to submit this soil report containing the results of geotechnical investigation for the above referenced site. To obtain information of the subsurface condition, a total of twenty-two (22) 10-ft deep soil borings and infiltration tests were planned to be drilled and performed. The purpose of this study was to explore the subsurface conditions of this storm water management (SWM) improvement project. The following report sections discuss the results of field and laboratory studies, design recommendations and construction methods for the proposed structures.

All samples obtained from soil test borings will be retained in our laboratory for a period of thirty (30) days from the date of this report. They will be available for inspection during this period. After that time, the samples will be discarded.

It has been a pleasure serving you on this project. If you have any questions regarding this report, or if we can be of further service in any way, please contact us.

Very truly yours,
AB Consultants, Inc.

Sattprakash Patel
Staff Engineer

Kim-Hou Chan, P.E.
Geotechnical & Field Services



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1.0 INTRODUCTION

1.1 General

This report summarizes the findings from subsurface soil investigations conducted by ABC for the storm water management (SWM) improvement project located in Montgomery County, Maryland. Per information provide to us, multiple Low Impact Design SWM facilities are proposed on various streets in Montgomery County, Maryland. The objective was accomplished by conducting field and laboratory tests. The results of these tests constitute the bases for determining pertinent design parameters for the proposed improvement. This study was conducted for McCormick Taylor and has been performed in general accordance with our letter proposal dated on December 2010 and subsequent conversations.

1.2 Scope of Work

The investigation of existing subsurface soil conditions at the site consisted of the following:

- Planning and executing subsurface exploration programs to evaluate soil and ground conditions for SWM improvements.
- Conducting on-site infiltration tests.
- Performing laboratory tests on soil samples obtained from the borings.
- Providing geotechnical report that includes results of field and laboratory studies.

1.3 Site Location

The field study was performed at various streets in the subdivision of Franklin Knolls, Montgomery County, Maryland. Soil borings and infiltration test holes are located on Weaver Street, Malibu Street, Gregorio Drive, Lowander Lane, Whitaker Terrace, Greer Avenue, Melbourne Avenue, and Curran Road.

2.0 FIELD ACTIVITIES AND SUBSURFACE EXPLORATION

2.1 Soil Borings

A total of twenty-two (22) soil borings were drilled for subsurface study on this project site. Borings were drilled at the referenced site to depths of 10-ft below the existing ground surface on November 20 and 30, 2012.and December 3 and 4, 2012. Soil

borings were staked out in the field by ABC. Site locations and boring plans are included in the Appendix.

2.2 Subsurface Investigation

Borings were drilled using truck mounted drill rig, B-61. Test borings were advanced by using hollow-stem augers and soil samples were obtained using the Standard Penetration Tests (SPT) in accordance with ASTM D1586. . SPT samples were obtained for each boring at depth intervals of every 2.5 feet. Due to overhead power lines, continuous flight auger drilling method was used to collect samples. A representative portion of each split spoon sample was placed in a glass jar and was transported to our laboratory.

In the split-barrel sampling procedure, a 2.0-inch O.D. split-barrel sampling spoon is driven into the ground with a 140-pound hammer, free falling a distance of 30 inches. The blows required to advance the sampling spoon to a specified distance are reported as the penetration resistance values. The values are shown on boring logs at the depths of their occurrence. The N-value is the sum of standard penetration resistance values that advanced through the last 12-inches of sampling. The N-value is an indication of the relative density of in-place granular soils and, to a lesser degree of accuracy, the consistency of cohesive soils.

Groundwater level was monitored in the boring. Samples obtained from the boring were inspected by a geotechnical engineer and the field logs were edited accordingly. The final logs that indicate the subsurface conditions encountered are included in the Appendix.

2.3 On-site Infiltration Test and Results

Twenty two (22) infiltration tests were performed in auger borings drilled at a 5-ft offset from the soil sample boring. Test holes were drilled with 8-inch diameter auger to a depth of 5.5-ft below existing ground. 5-inch diameter solid PVC casings were inserted and water was then introduced for an overnight presoak period. Infiltration tests were performed the next day by refilling PVC casings with water to the presoak level and then monitoring water levels for one hour time. Repeat this procedure (refilling the casing each time) three additional times, for a total of four observations. Field in-situ infiltration test data are included in the Appendix and results are summarized in following table.

SUMMARY OF IN-SITU INFILTRATION TEST RESULTS				
Boring No.	Test Hole Depth	Existing Elevation	Sample Description at Bottom of Test Hole	Suggested Average Infiltration Rate (in./hr)
B-51	5.5	283.5	Silty fine sand	1.7
B-52	5.5	258.5	Silty fine sand	0.2*
B-53	5.5	240.5	Silty fine sand	0.5
B-54	5.5	237	Silty fine sand	1.2
B-55	5.5	259.5	Silty fine sand	0.4*
B-56	5.5	266	Silty fine sand	0.6
B-57	5.5	268.5	Silty fine sand	1.2
B-58	5.5	271	Silty fine sand	1.2
B-59	5.5	273	Silty fine sand	1.1
B-60	5.5	263.5	Silty fine sand	1.0
B-61	5.5	270	Silty fine sand	2.7
B-62	5.5	296.5	Silty fine sand	1.1
B-63	5.5	303	Silty fine sand	0.3*
B-64	5.5	277.5	Silty fine sand	1.9
B-65	5.5	285.5	Silty fine sand	1.8
B-66	5.5	299.5	Silty fine sand	1.0
B-67	5.5	307	Silty fine sand	1.6
B-68	5.5	307.5	Silty fine sand	1.4
B-69	5.5	297.5	Silty fine sand	1.2
B-70	5.5	290.5	Silty fine sand	0.6
B-71	5.5	292.5	Silty fine sand	1.7
B-72	5.5	300	Silty fine sand	1.5

* Low infiltration rates were recorded. It may be the result of dense soil stratum below infiltration holes.

3.0 LABORATORY TESTING PROGRAM

3.1 Laboratory Testing

Laboratory tests were performed on selected representative samples. Natural moisture contents were performed on all soil samples, and results are included in boring logs. Atterberg limits and sieve analysis were conducted on selected samples. Atterberg limits results are shown in boring logs in correspondence with the sample depths and results of sieve analyses are presented in the Appendix.

4.0 GENERAL SITE AND SUBSURFACE CONDITIONS

4.1 Site Condition

The SWM facilities are proposed on various streets in the Franklin Knolls Subdivision in Silver Spring, Maryland. Borings on this project site are located in the single-home residential areas. Utilities in the vicinity of boring holes include underground water, sewer, gas, cable and overhead power.

4.2 Site Geology

Geologically, the project site is in the Boulder Gneiss of the Eastern Piedmont Metasedimentary Rocks Series of the Piedmont Plateau Province, which is composed of thick-bedded to massive, pebble- and boulder-bearing, arenaceous to pelitic metamorphic rock, typically a medium-grained, garnet-oligoclase-mica-quartz gneiss; locally an intensely foliated gneiss or schist.

4.3 Subsurface Soil Condition

Various soil types were grouped into the major zones noted on the boring logs. A brief explanation of the terms and notes used in the logs is included with this report. The stratification lines designating the interfaces between earth materials on the boring logs are approximate; in situ, the transitions may be gradual. Detailed soil description and depth of various soil strata are given in boring logs, together with SPT blow counts with depth. In general, the encountered soils are grouped and summarized as follows:

- Topsoil: Topsoil was encountered in all boring. Topsoil is defined as the more high-organic, weathered surficial soils horizon capable of supporting vegetation.
- Type A *Silty Fine Sand*: Below the Topsoil, reddish brown to brown and gray sandy soil with mica and trace of rock fragments was encountered in most of borings and extended to completion depth of borings. N-values in this layer were ranging from 4 to more than 50 blows per foot. Due to the presence of rock fragments, higher blow counts were recorded in few boreholes at various depths.
- Type B *Silty Clay*: Reddish brown low plasticity clayey soil was encountered in boring B-67 at depth of 6 ft below Type A Soil and extended to completion depth of boring. N-values in these soils were ranging from 4 to 10 blows per foot.

4.4 Groundwater Observations

Groundwater observations were made in every borehole during drilling, and after completion of drilling operations. As noted on boring logs, groundwater was **not encountered** in all borings during drilling and after drilling. Water level observations are presented at the lower left hand corner of boring logs. Fluctuations in the level and quantity of ground water will occur due to variations in rainfall, temperature, soil permeability and other factors not evident at the time of the water level measurements recorded on boring logs.

5.0 ANALYSIS AND RECOMMENDATIONS

5.1 SWM Facility Considerations

The infiltration design criteria established by the Maryland Department of the Environment (MDE) Water Management Administration advises that infiltration practices are not recommended to be utilized: (a) in regions where the bottom of the infiltration facility is in existing or newly placed fill, or (b) in materials that exhibit an infiltration rates less than 0.52 inches per hour, or (c) where the groundwater table or bedrock is within 4 feet of the bottom of the infiltration facility.

Proposed plan or structural detail of the proposed SWM facilities were not provided by the date of this report. Per the information provided from McCormick Taylor, Inc., infiltration structures are considered in this SWM improvement project. Based on information revealed from borings, laboratory test results, and our visual classification of the recovered soil samples, the encountered subsoils are classified per the USDA classification system and a summary is presented in the following table.

SUMMARY OF SOIL PROPERTIES PER USDA CLASSIFICATION				
Boring No.	Sample Depth (ft)	USDA Textural Classification	Minimum Infiltration Rate (in/hr)	Hydrologic Soil Grouping
B-51	0.5 to 10	Sandy loam	1.02	A
B-52	0.5 to 10	Sandy loam	1.02	A
B-53	0.5 to 10	Sandy loam	1.02	A
B-54	0.5 to 10	Sandy loam	1.02	A
B-55	0.5 to 10	Sandy loam	1.02	A
B-56	0.5 to 10	Sandy loam	1.02	A
B-57	0.5 to 10	Sandy loam	1.02	A
B-58	0.5 to 10	Loamy sand	2.41	A
B-59	0.5 to 10	Sandy loam	1.02	A
B-60	0.5 to 10	Loamy sand	2.41	A
B-61	0.5 to 10	Loamy sand	2.41	A
B-62	0.5 to 10	Loamy sand	2.41	A
B-63	0.5 to 10	Sandy loam	1.02	A
B-64	0.5 to 10	Loamy sand	2.41	A
B-65	0.5 to 10	Loamy sand	2.41	A
B-66	0.5 to 10	Loamy sand	2.41	A
B-67	0.5 to 6	Sandy loam	1.02	A
	6 to 10	Silty clay	0.04	D
B-68	0.5 to 10	Loamy sand	2.41	A
B-69	0.5 to 10	Loamy sand	2.41	A
B-70	0.5 to 10	Sandy loam	1.02	A
B-71	0.5 to 10	Loamy sand	2.41	A
B-72	0.5 to 10	Loamy sand	2.41	A

Considering the USDA classification, boring information, on-site infiltration tests and groundwater observation, most of the proposed SWM areas are considered suitable for infiltration design in accordance with general design criteria. Results of our findings are summarized in the following table.

SUMMARY OF SWM CONSIDERATIONS AT 2.5- to 6-ft BELOW GROUND					
Boring No.	Existing Elevation	Facility Bottom Elevation	On-site Infiltration Rate (in/hr)	Infiltration Rate per USDA (in/hr)	Infiltration SWM Facility
B-51	283.5	278	1.7	1.02	Acceptable
B-52	258.5	253	0.2*	1.02	Not Acceptable
B-53	240.5	235	0.5	1.02	Acceptable
B-54	237	231.5	1.2	1.02	Acceptable
B-55	259.5	254	0.4*	1.02	Not Acceptable
B-56	266	260.5	0.6	1.02	Acceptable
B-57	268.5	263	1.2	1.02	Acceptable
B-58	271	265.5	1.2	2.41	Acceptable
B-59	273	267.5	1.1	1.02	Acceptable
B-60	263.5	258	1.0	2.41	Acceptable
B-61	270	264.5	2.7	2.41	Acceptable
B-62	296.5	291	1.1	2.41	Acceptable
B-63	303	297.5	0.3*	1.02	Not-Acceptable
B-64	277.5	272	1.9	2.41	Acceptable
B-65	285.5	280	1.8	2.41	Acceptable
B-66	299.5	294	1.0	2.41	Acceptable
B-67	307	301.5	1.6	1.02	Acceptable
B-68	307.5	.302	1.4	0.04	Acceptable
B-69	297.5	292	1.2	2.41	Acceptable
B-70	290.5	285	0.6	2.41	Acceptable
B-71	292.5	287	1.7	1.02	Acceptable
B-72	300	294.5	1.5	2.41	Acceptable

* Low infiltration rates were recorded. It may be the result of dense soil stratum.

It is recommended that during construction of the SWM facility, the soil encountered at and below the planned elevation, to be verified along with their infiltration characteristics.

6.0 SITE GRADING AND CONSTRUCTION CONSIDERATIONS

6.1 Site Grading

Grading preparation should include clearing within the limits of construction, grubbing and removal of the organic surficial soils. The potential thickness of material subject to stripping will vary from zero inches to six (6) inches. Design and construction

should include provisions for temporary storage, hauling, and disposal of stripped materials at an approved off-site location.

Following stripping, cutting, the subgrade should be verified prior to the installation of SWM structures. Areas identified during the verification process as soft or exhibiting “pumping” tendencies should be undercut, processed and recompacted or removed and replaced with suitable fill, whichever is appropriate.

6.2 Suitable Fill Material

Fill and backfill for general areas should be free of organics and debris and rock fragments in excess of 3-in. in any dimension. In the upper 18 inches of fill, maximum particle size should be limited to about 1.5 inches. As per ASTM D2478 classification, imported select fill should consist of sandy gravel (GM), clayey gravel (GC), gravelly sand (SP), silty sand (SM), clayey sand (SC), or low-plasticity sandy clay (CL) with a liquid limit and plasticity index of less than 40 and 15 respectively, or an approved alternate.

6.3 Compaction Requirement

Fill soils should be compacted to a minimum of 95 percent of maximum Standard Proctor dry density (ASTM D698), with a moisture content range of minus to plus 2 percent of optimum. Fill should be placed in a nominal 10-inch-thick loose lifts. Each lift of fill should be properly compacted, tested and approved prior to placing subsequent lifts.

7.0 **CONSTRUCTION CONSIDERATIONS**

Positive surface drainage should be established at the start of work, be maintained during construction and following completion of the project to prevent surface water ponding and subsequent saturation of subgrade soils. Prolonged exposure or saturation of subgrade soils by ponding or runoff water may result in significant changes in strength and compressibility characteristics. Saturated subgrade soils should be excavated and replaced with suitable materials.

Depending upon weather conditions during and prior to construction, groundwater may be encountered in the excavation areas. Any seepage into the construction

excavation could be controlled by pumping from sump pits. During site preparation, surface runoff should be directed away from the construction areas.

8.0 GENERAL COMMENTS

The soil classifications presented in this report are based upon the data obtained from the soil borings performed at indicated locations and from any other information discussed in this report. This report does not reflect any variations that may occur across the site. The nature and extent of such variations may not become evident until construction. If variations appear evident, the conclusion and recommendations of this report should then be reviewed by ABC geotechnical engineer in light of the new information.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranties, either expressed or implied, are intended or made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by ABC geotechnical engineer of record.

APPENDIX

- A. General Notes
- B. Vicinity Map
- C. Boring Plan
- D. Boring Logs
- E. Lab Test Results
- E. Field Infiltration Test Results

GENERAL NOTES

Drilling and Sampling Symbols



N = Standard penetration, blows per foot of a 140 lbs hammer for 30" drop

RQD = Rock Quality Designation

LL = Liquid Limit

PL = Plastic Limit

PI = Plasticity Index

Cohesionless Soils

If the sand or silt content of a soil is great enough, the soil becomes non-cohesive or semi-cohesive. The soil classification becomes SAND or SILT with the other soil constituents being modifying.

Based on N-Value

0 to 4 Blows.....Very Loose

5 to 9 Blows.....Loose

10 to 29 Blows.....Medium Dense

30 to 59 Blows.....Dense

Over 60 Blows.....Very Dense

Cohesive Soils

If clay content is sufficient so that clay dominates soil properties, then CLAY becomes the major soil constituent as modifier. Other minor soil constituents may be added according to classification breakdown for cohesion less soils: i.e. silty clay, trace of some sand, trace of gravel.

Based on N-Value

0 to 3 Blows.....Very Soft

4 to 5 Blows.....Soft

6 to 16 Blows.....Firm

16 to 30 Blows.....Stiff

30 to 60 Blows.....Very Stiff

Over 61 Blows.....Hard

Based on Penetrometer Value

Below 0.25.....Very Soft

0.25 to 0.49.....Soft

0.50 to 0.99.....Firm

1.00 to 1.99.....Stiff

2.00 to 3.99.....Very Stiff

Over 4.00.....Hard

Quantity Modifiers

<u>Term</u>	<u>% of Dry Weight</u>
trace	0 to 10
little	11 to 20
some	21 to 35
and/with	36 to 50

Particle Size Identifications

BoulderOver 8 inch diameter

Cobbles.....3 inch to 8 inch

Gravel.....Coarse.....1 inch to 3 inch

Medium.....1/2 inch to 1 inch

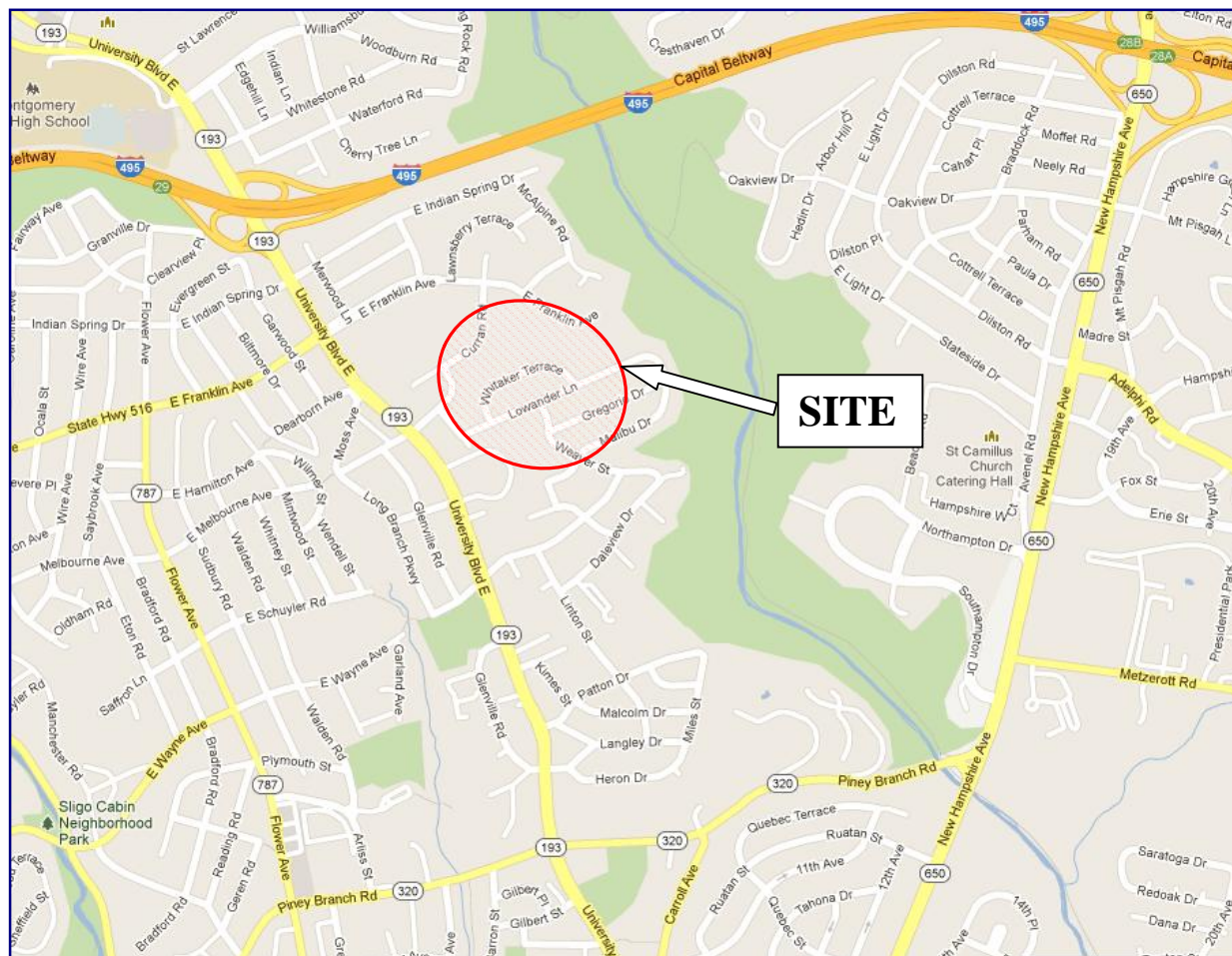
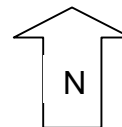
Fine.....4.75 mm to 1/2 inch

Sand.....Coarse.....2 mm to 4.75 mm

Medium.....0.425 mm to 2 mm

Fine.....0.075 mm to 0.425 mm

Silt/Clay.....Below 0.075 mm



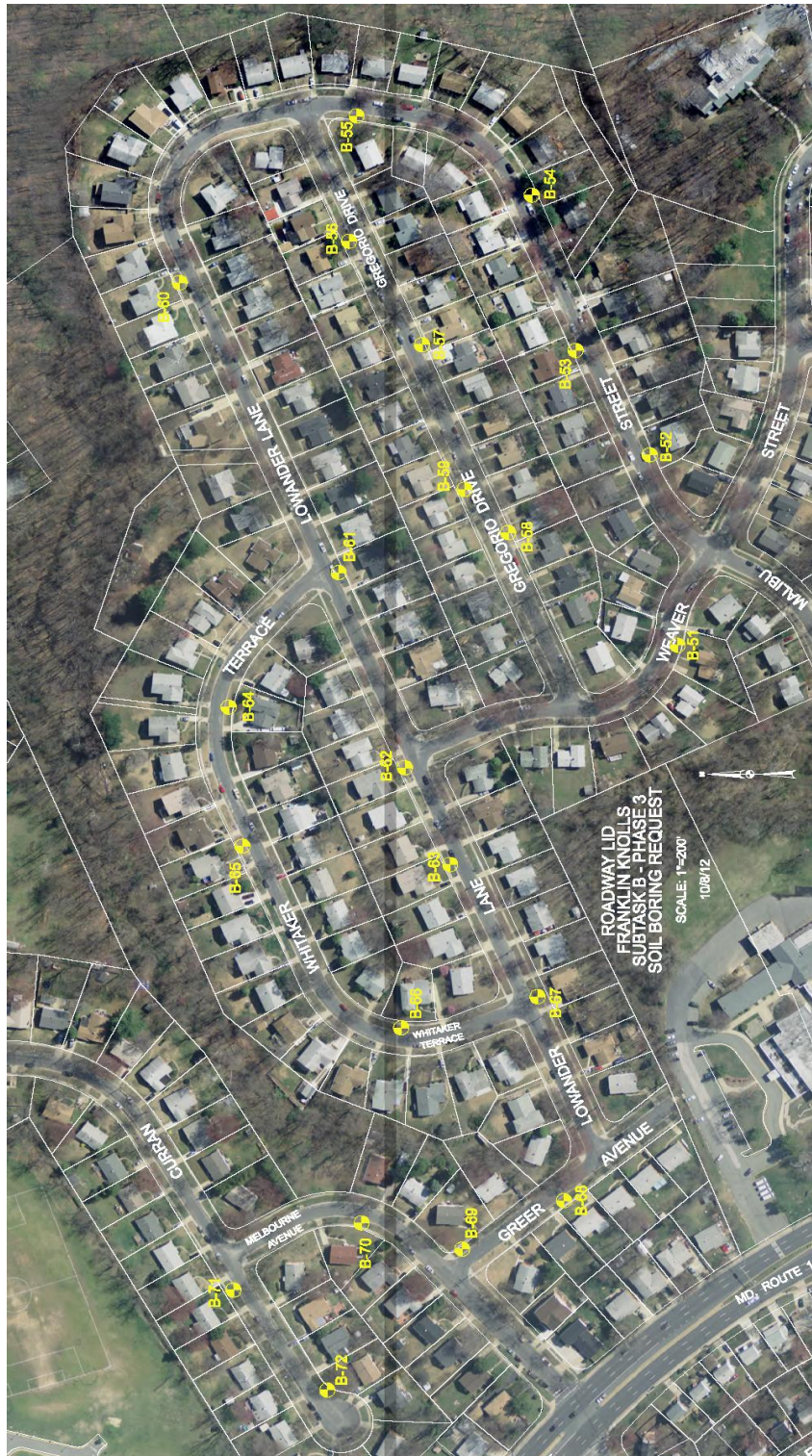
VICINITY MAP

Montgomery County Task Order #13 Subtask B Phase III
Montgomery County, Maryland

JOB NO.: 10-368.01

SCALE: N.T.S.

DATE: 12/11/12



BORING PLAN

Montgomery County Task Order #13 Subtask B Phase III
Montgomery County, Maryland

JOB NO.: 10-368.01

SCALE: N.T.S.

DATE: 12/11/12

BORING LOGS

Project No. 10-368.01

LOG OF BOREHOLE B-51

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 283.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil	283.2										
Medium dense to dense reddish brown to brown SILTY FINE SAND (SM) with mica and trace of rock fragments			3-6-9 N=15	1	SS	10/18 56%	12				
			4-8-9 N=17	2	SS	8/18 44%	12				
		5									
-become loose between 6 and 7.5 ft			4-3-6 N=9	3	SS	12/18 67%	14			22	
			10-15-21 N=36	4	SS	7/18 39%	8				
10.0	273.5	10									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/4/12	FINISHED:	12/4/12
DRILL CO.:	ABC	DRILL RIG:	B-61
DRILLER:	PS	ASS'T DRILLER:	
LOGGED BY:		APPROVED:	

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-52

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 258.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 2" Topsoil		258.3		1	AU	18	13				CFA sample
Brown and gray SILTY FINE SAND (SM) with mica and rock fragments				2	AU	18	16			35	
		5		3	AU	18	11				
				4	AU	18	12				
10.0		248.5									
End of Boring @ 10 ft		10									
Due to over head utility, borehole was drilled by continuous flight auger method											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 4.5 ft	@ 0 Hrs
WL	Dry, caved in 5 ft	After 24 Hrs



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/4/12	FINISHED:	12/4/12
DRILL CO.:	ABC	DRILL RIG:	B-61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Franklin Knolls, Maryland

End of Boring @ 10 ft



AB Consultants, Inc.
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/4/12	FINISHED:	12/4/12
DRILL CO.:	ABC	DRILL RIG:	B-61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

Project No. 10-368.01

LOG OF BOREHOLE B-54

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 237.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil	236.7										
Loose reddish brown and gray SILTY FINE SAND (SM) with mica			2-3-4 N=7	1	SS	9/18 50%	18				
-become medium dense between 3.5 and 5 ft			3-5-6 N=11	2	SS	14/18 78%	16			28	
		5									
			2-2-3 N=5	3	SS	16/18 89%	21				
			2-3-4 N=7	4	SS	12/18 67%	17				
10.0	227.0	10									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/3/12	FINISHED:	12/3/12
DRILL CO.:	ABC	DRILL RIG:	B-61
DRILLER:	PS	ASS'T DRILLER:	
LOGGED BY:		APPROVED:	

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-55

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 259.5 ft.

0.4 5" Topsoil

259.1

Loose to very dense brown and gray SILTY
FINE SAND (SM) with mica and rock fragments

GRAPHIC LOG

DEPTH (FT)

SAMPLES

TESTS

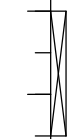
BLOWS/6"
N - VALUE
RQD

NUMBER

TYPE

IN. RECOVERED
IN. DRIVEN

MOISTURE (%)

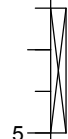
DRY DENSITY
(PCF)Qu
(TSF)% PASSING
#200 SIEVEREMARKS/
ADDITIONAL
DATA2-3-3
N=6

1

SS

9/18
50%

11

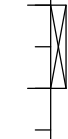
2-4-9
N=13

2

SS

10/18
56%

20



3-51/6"

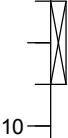
3

SS

9/12
75%

9

22



35-51/6"

4

SS

7/12
58%

5

10.0

249.5

10

Auger refusal @ 9.5 ft

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6.5 ft	After 24 Hrs



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 12/4/12

FINISHED: 12/4/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-56

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc


PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 266.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil		265.7									
Loose to medium dense brown and gray SILTY SAND (SM) with mica and rock fragments -become dense between 6 and 7.5 ft			1-1-4 N=5	1	SS	7/18 39%	17				
			5-7-14 N=21	2	SS	10/18 56%	16			24	
			7-21-19 N=40	3	SS	8/18 44%	6				
			3-8-16 N=24	4	SS	13/18 72%	17				
10.0		256.0									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6.5 ft	After 24 Hrs



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/3/12	FINISHED:	12/3/12
DRILL CO.:	ABC	DRILL RIG:	B-61
DRILLER:	PS	ASS'T DRILLER:	
LOGGED BY:		APPROVED:	

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-57

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 268.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil		268.2									
Medium dense brown and gray SILTY FINE SAND (SM) with mica			2-5-8 N=13	1	SS	9/18 50%	6				
-become very dense between 3.5 and 5 ft			22-35-51 N=86	2	SS	9/18 50%	6			28	
		5									
			7-12-19 N=31	3	SS	16/18 89%	13				
			6-12-16 N=28	4	SS	14/18 78%	17				
		10									
End of Boring @ 10 ft		258.5									

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



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Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 12/3/12

FINISHED: 12/3/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-58

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 271.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil		270.7									
Dense to very dense brown and gray SILTY FINE SAND (SM) with mica											
			3-18-37 N=55	1	SS	10/18 56%	8				
			30-51/5"	2	SS	7/11 64%	7			19	
		5									
			51/6"	3	SS	3/6 50%	8				
			30-51/4"	4	SS	7/10 70%	7				
10.0		261.0									
Auger refusal @ 9.5 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 5.5 ft	After 24 Hrs



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Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/3/12	FINISHED:	12/3/12
DRILL CO.:	ABC	DRILL RIG:	B-61
DRILLER:	PS	ASS'T DRILLER:	
LOGGED BY:		APPROVED:	

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-59

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 273.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil		272.7									
Very dense brown and gray SILTY FINE SAND (SM) with mica											
			12-27-33 N=60	1	SS	11/18 61%	10				
			7-51/6"	2	SS	7/12 58%	11				
		5									
			17-37-38 N=75	3	SS	14/18 78%	9			24	
			17-34-45 N=79	4	SS	15/18 83%	8				
10.0		263.0									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



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Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 12/4/12

FINISHED: 12/4/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-60

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 263.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil	263.2										
Loose to dense brown and gray SILTY FINE SAND (SM) with mica											
			3-4-4 N=8	1	SS	10/18 56%	12				
			3-2-4 N=6	2	SS	15/18 83%	17				
		5	14-26-23 N=49	3	SS	12/18 67%	10			15	
			7-17-31 N=48	4	SS	13/18 72%	11				
10.0	253.5	10									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



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Fax: 301-306-3092

STARTED:	12/3/12	FINISHED:	12/3/12
DRILL CO.:	ABC	DRILL RIG:	B-61
DRILLER:	PS	ASS'T DRILLER:	
LOGGED BY:		APPROVED:	

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-61

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 270.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil	269.7										
Medium dense to very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments			3-5-17 N=22	1	SS	9/18 50%	12				
		5	16-26-35 N=61	2	SS	15/18 83%	7				
			20-21-14 N=35	3	SS	7/18 39%	9			20	
			51/6"	4	SS	5/6 83%	3				
10.0	260.0	10									
Auger refusal @ 9 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6.5 ft	After 24 Hrs



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Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/30/12

FINISHED: 11/30/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-62

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 296.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil		296.2									
Medium dense to dense brown and gray SILTY FINE SAND (SM) with mica											
			6-10-15 N=25	1	SS	8/18 44%	17				
			7-13-18 N=31	2	SS	15/18 83%	11				
		5									
			10-15-20 N=35	3	SS	12/18 67%	12			23	
			7-17-29 N=46	4	SS	13/18 72%	9				
10.0		286.5									
End of Boring @ 10 ft		10									

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



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Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/30/12

FINISHED: 11/30/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-63

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 303.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.4 5" Topsoil	302.6										
Medium dense reddish brown to brown SILTY FINE SAND (SM) with mica			3-4-11 N=15	1	SS	7/18 39%	16				
-become dense between 3.5 and 5 ft			10-18-26 N=44	2	SS	18/18 100%	15			29	
		5									
			7-11-15 N=26	3	SS	12/18 67%	13				
			5-9-12 N=21	4	SS	16/18 89%	14				
		10									
10.0	293.0										
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



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Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/30/12

FINISHED: 11/30/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-64

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 277.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil	277.2										
Medium dense to very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments			3-10-11 N=21	1	SS	12/18 67%	10				
		5	5-8-13 N=21	2	SS	11/18 61%	10			26	
			18-51/4"	3	SS	8/10 80%	7				
			51/3"	4	SS	2/3 67%	4				
10.0	267.5	10									
Auger refusal @ 9 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



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Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/30/12

FINISHED: 11/30/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-65

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 285.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil	285.2										
Brown and gray SILTY FINE SAND (SM) with mica				1	AU	18	5				CFA sample
				2	AU	18	7			21	
		5		3	AU	18	6				
				4	AU	18	10				
10.0	275.5	10									
End of Boring @ 10 ft											
Due to over head utility, borehole was drilled by continuous flight auger method											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/30/12

FINISHED: 11/30/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASST DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-66

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 299.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil	299.2										
Medium dense to very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments			3-7-9 N=16	1	SS	13/18 72%	15				
			12-14-23 N=37	2	SS	12/18 67%	13				
		5	20-51/3"	3	SS	7/9 78%	8			19	
			51/6"	4	SS	6/6 100%	9				
10.0	289.5	10									
Auger refusal @ 9 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6.5 ft	After 24 Hrs



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9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/30/12

FINISHED: 11/30/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-67

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc








PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

		GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS					
				BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA	
SURFACE ELEV.: 307.0 ft.													
0.4	5" Topsoil	306.6											
	Loose brown SILTY FINE SAND (SM) with mica				2-4-5 N=9	1	SS	12/18 67%	18				
				4-4-4 N=8	2	SS	17/18 94%	15			29		
6.0		301.0			1-2-2 N=4	3	SS	18/18 100%	24			84	LL = 30 PL = 19 PI = 11
					2-4-6 N=10	4	SS	17/18 94%	17				
10.0		297.0											
	End of Boring @ 10 ft												

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6.5 ft	After 24 Hrs



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/20/12

FINISHED: 11/20/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-68

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 307.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil		307.2									
Loose to medium dense brown and gray SILTY FINE SAND (SM) with mica											
			1-2-2 N=4	1	SS	8/18 44%	16				
			2-2-3 N=5	2	SS	14/18 78%	17				
		5									
			4-6-6 N=12	3	SS	17/18 94%	10			18	
			4-6-7 N=13	4	SS	13/18 72%	15				
10.0		297.5									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



AB Consultants, Inc.

9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/20/12

FINISHED: 11/20/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-69

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 297.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil	297.2										
Loose to medium dense brown and gray SILTY FINE SAND (SM) with mica											
			1-2-2 N=4	1	SS	11/18 61%	12				
		5	6-8-11 N=19	2	SS	10/18 56%	12			23	
			6-6-9 N=15	3	SS	15/18 83%	13				
			7-10-13 N=23	4	SS	12/18 67%	10				
10.0	287.5	10									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



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Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/20/12

FINISHED: 11/20/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-70

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 290.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 3" Topsoil		290.2									
Loose brown and gray SILTY FINE SAND (SM) with mica											
			2-2-4 N=6	1	SS	10/18 56%	14				
			3-4-4 N=8	2	SS	14/18 78%	18			36	
		5									
			3-4-5 N=9	3	SS	9/18 50%	21				
			1-2-2 N=4	4	SS	16/18 89%	22				
		10									
10.0		280.5									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	After 24 Hrs



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Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/20/12	FINISHED: 11/20/12
DRILL CO.: ABC	DRILL RIG: B-61
DRILLER: PS	ASS'T DRILLER:
LOGGED BY:	APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-71

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 292.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil	292.2			1	AU	18	10				CFA sample
Brown and gray SILTY FINE SAND (SM) with mica and rock fragments				2	AU	18	7			23	
		5		3	AU	18	6				
				4	AU	18	4				
10.0	282.5	10									
End of Boring @ 10 ft											
Due to over head utility, borehole was drilled by continuous flight auger method											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6.5 ft	After 24 Hrs



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Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/20/12

FINISHED: 11/20/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

ASST DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

Project No. 10-368.01

LOG OF BOREHOLE B-72

Sheet 1 of 1

CLIENT:

McCormick Taylor, Inc

PROJECT:

MO County Task Order # 13 Subtask B (Phase 3)

ARCHITECT/ENGINEER:

SITE:

Franklin Knolls, Maryland

SURFACE ELEV.: 300.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.3 4" Topsoil	299.7										
Loose to medium dense brown and gray SILTY FINE SAND (SM) with mica											
		5	2-3-5 N=8	1	SS	8/18 44%	16				
			4-6-6 N=12	2	SS	14/18 78%	18				
			2-2-3 N=5	3	SS	12/18 67%	13			22	
			2-4-10 N=14	4	SS	15/18 83%	14				
10.0	290.0	10									
End of Boring @ 10 ft											

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6.5 ft	After 24 Hrs



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Phone: 301-306-3091
Fax: 301-306-3092

STARTED: 11/20/12

FINISHED: 11/20/12

DRILL CO.: ABC

DRILL RIG: B-61

DRILLER: PS

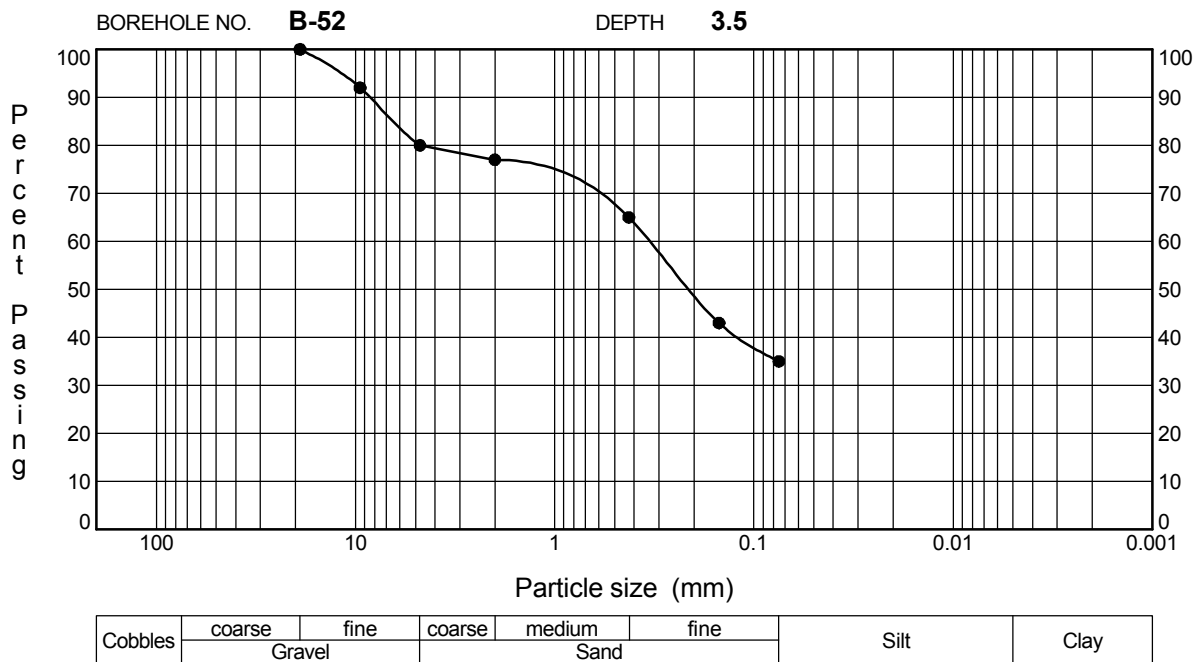
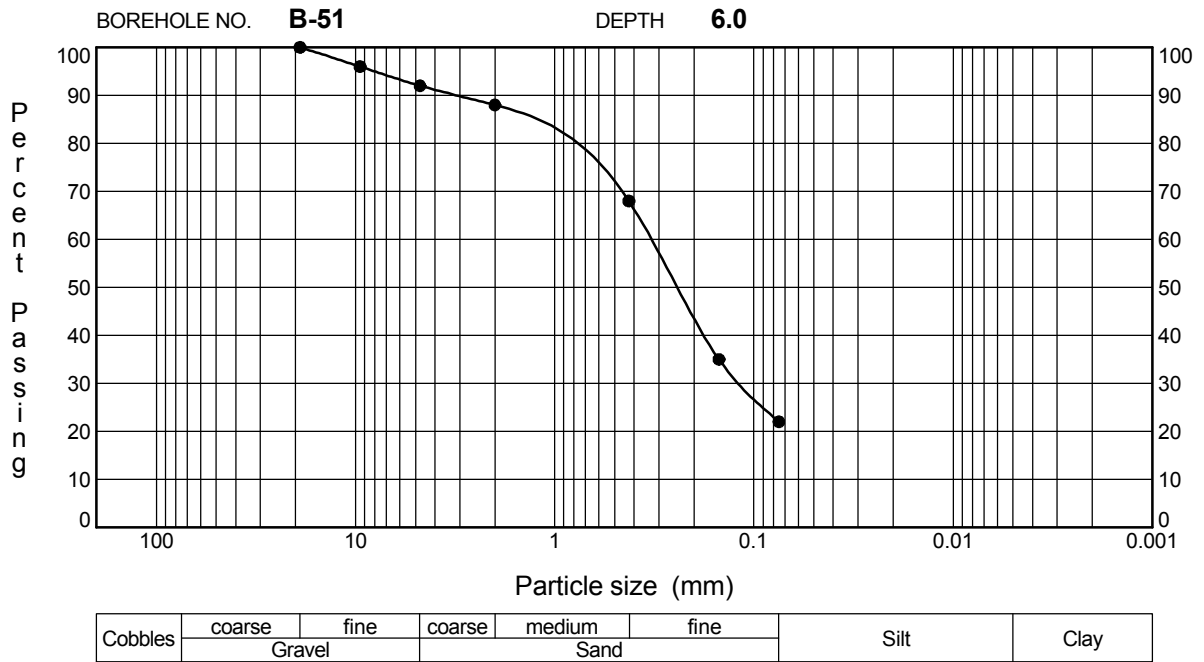
ASS'T DRILLER:

LOGGED BY:

APPROVED:

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 3).GPJ AB CONS.GDT 1/17/13

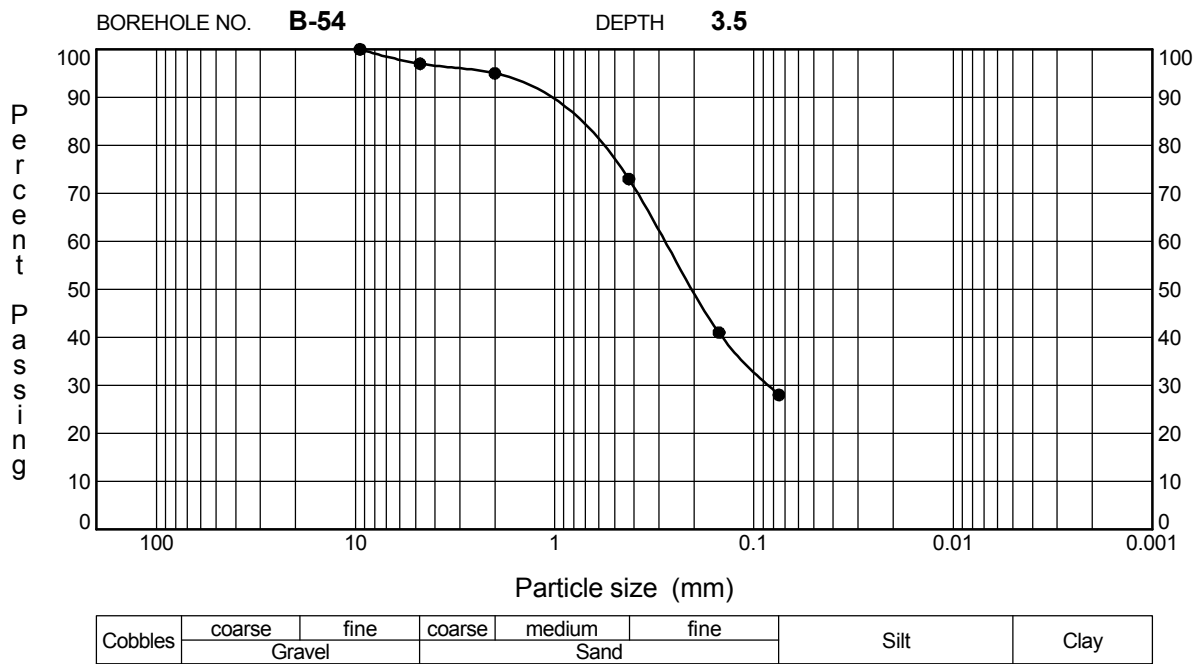
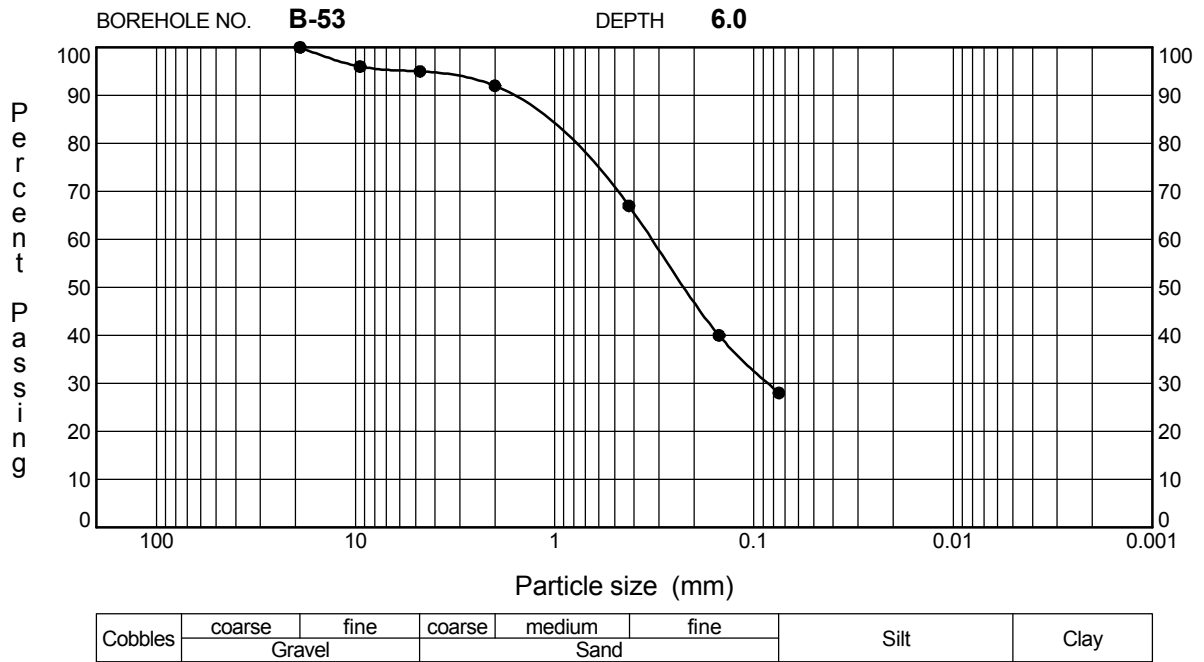
LAB TEST RESULTS



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GRAIN SIZE DISTRIBUTION

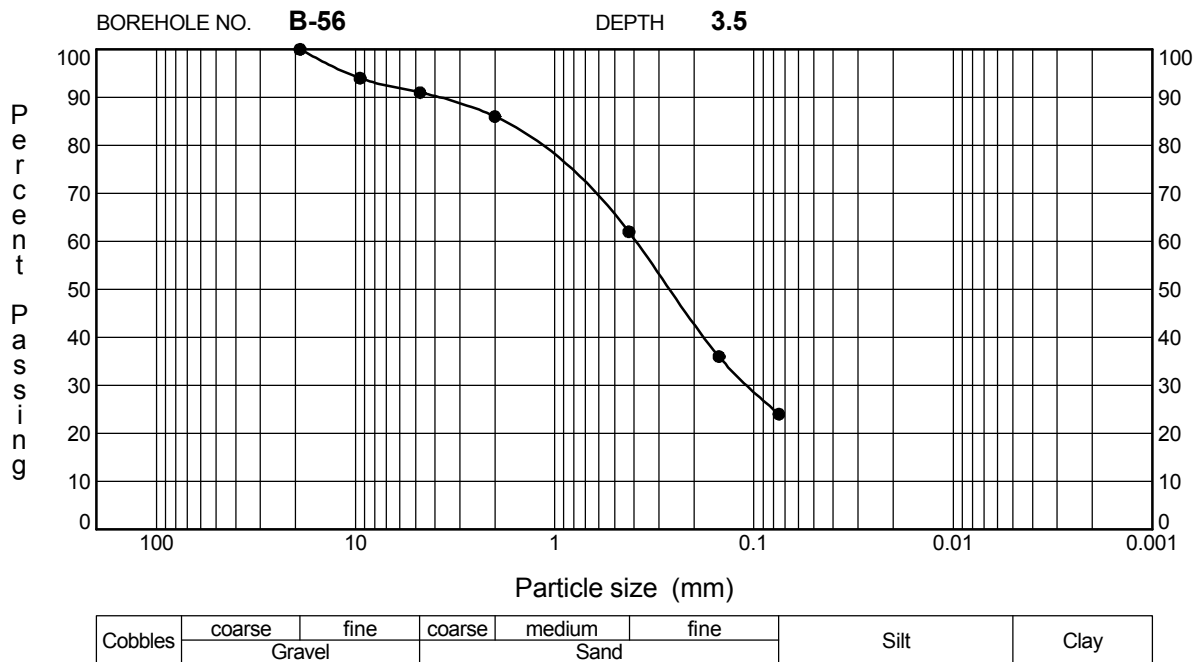
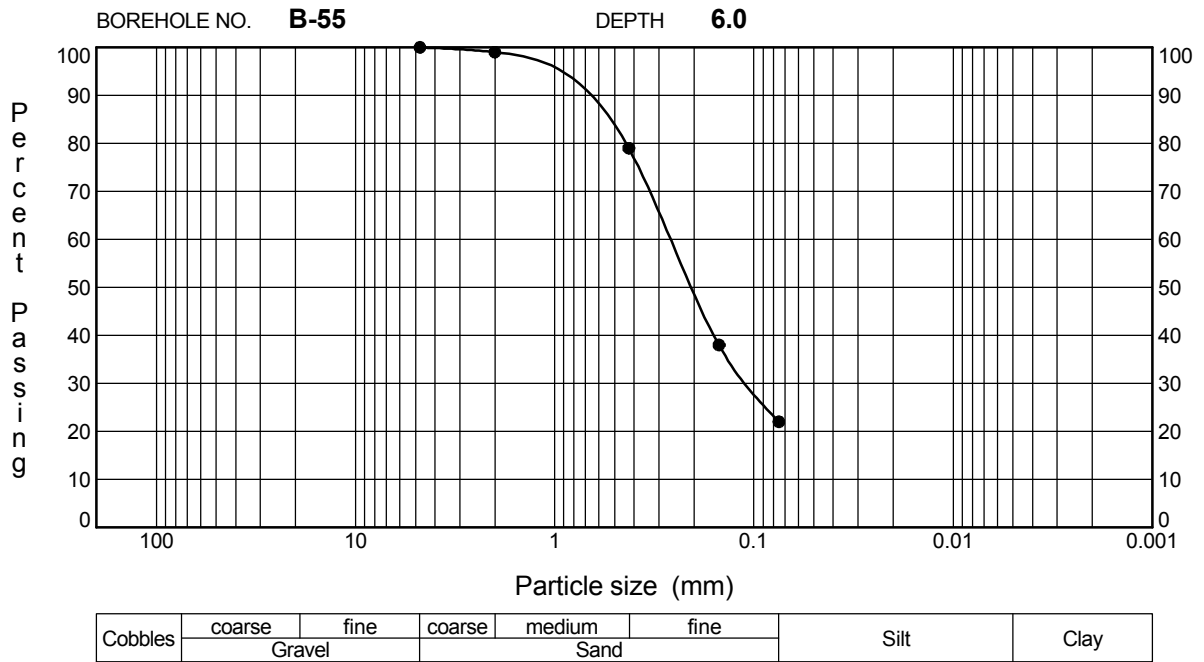
CLIENT: McCormick Taylor, Inc
 PROJECT NO.: 10-368.01
 PROJECT: MO County Task Order # 13 Subtask B (Phase 3)
 SITE:
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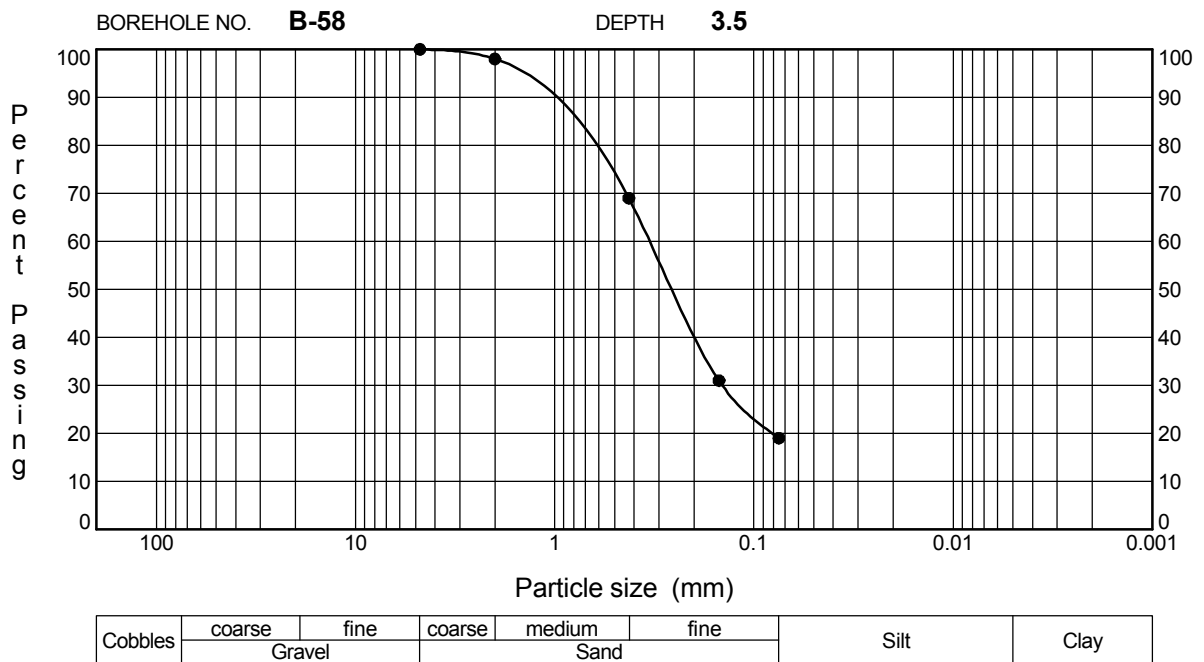
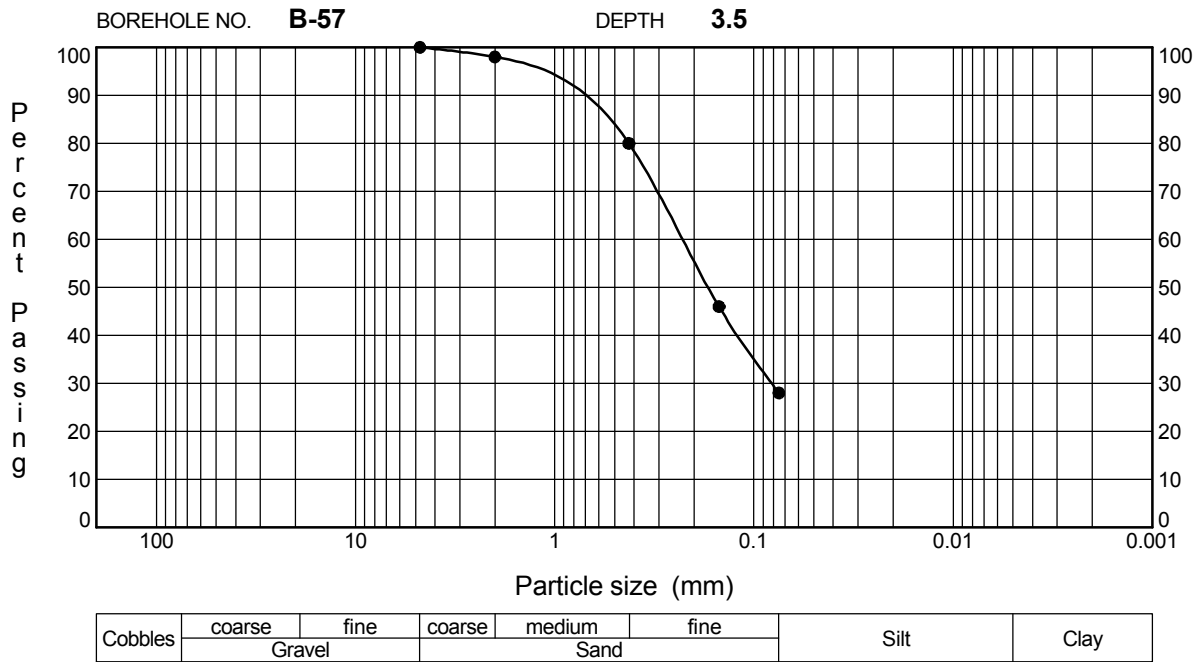
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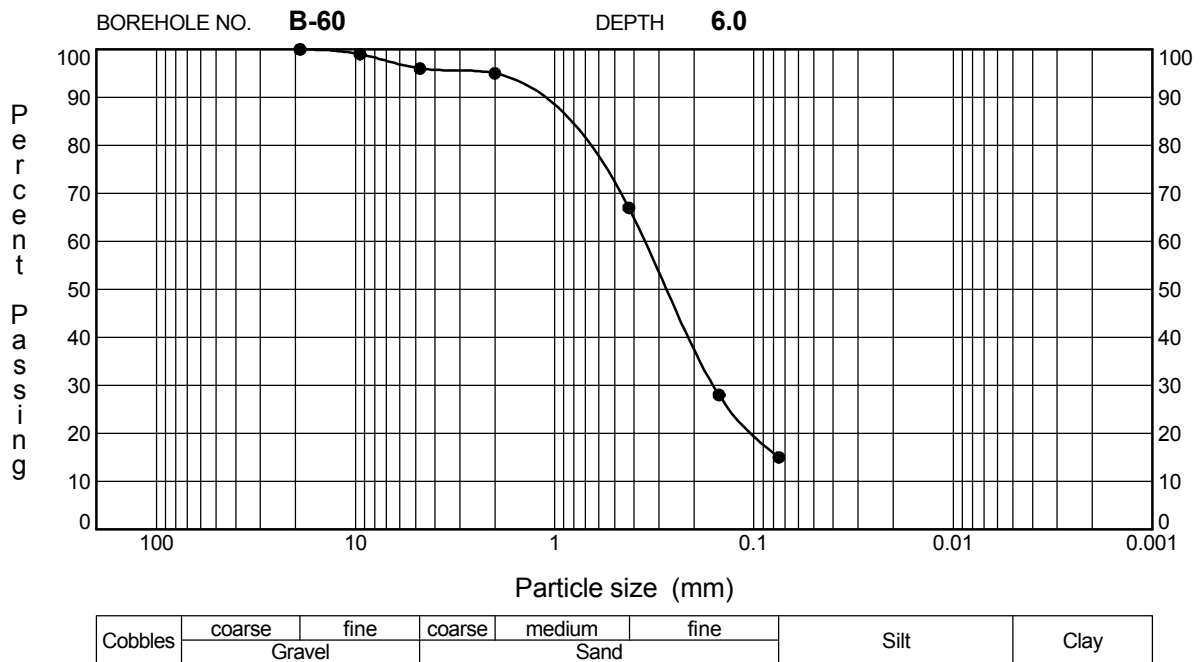
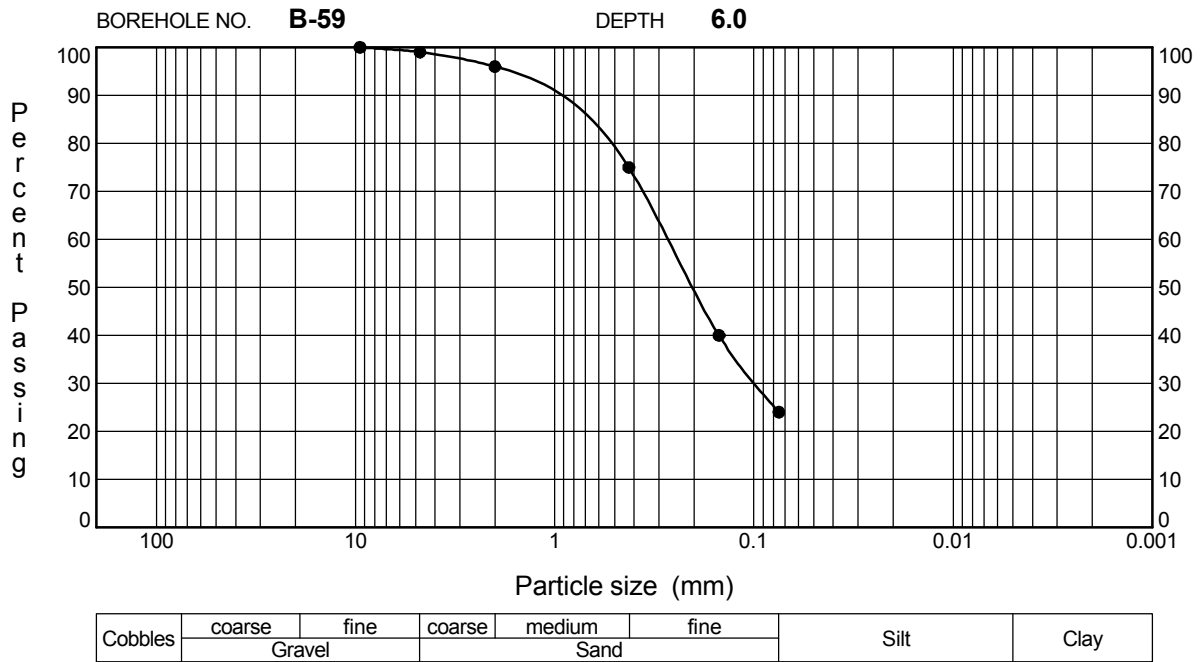
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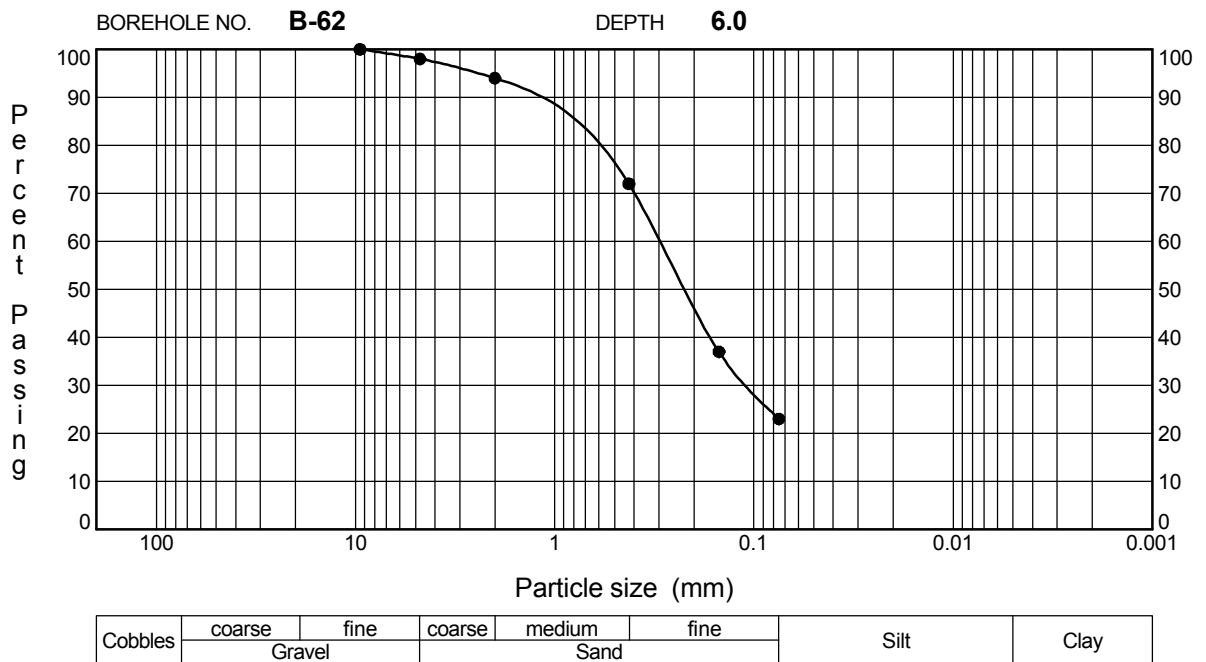
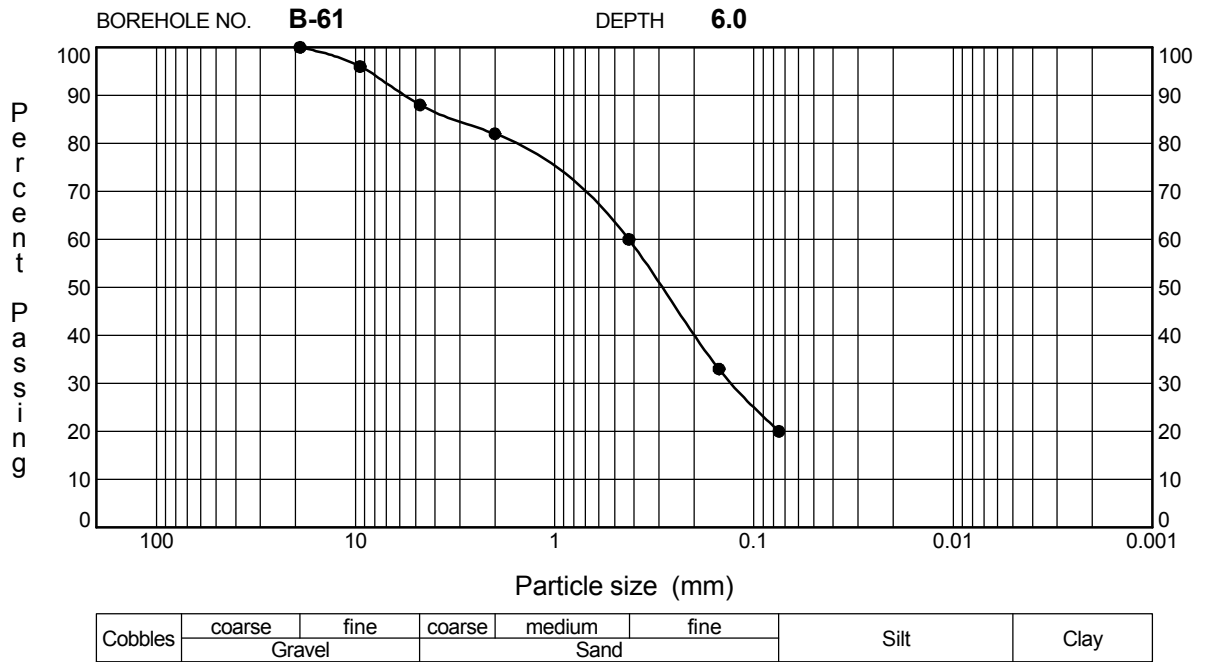
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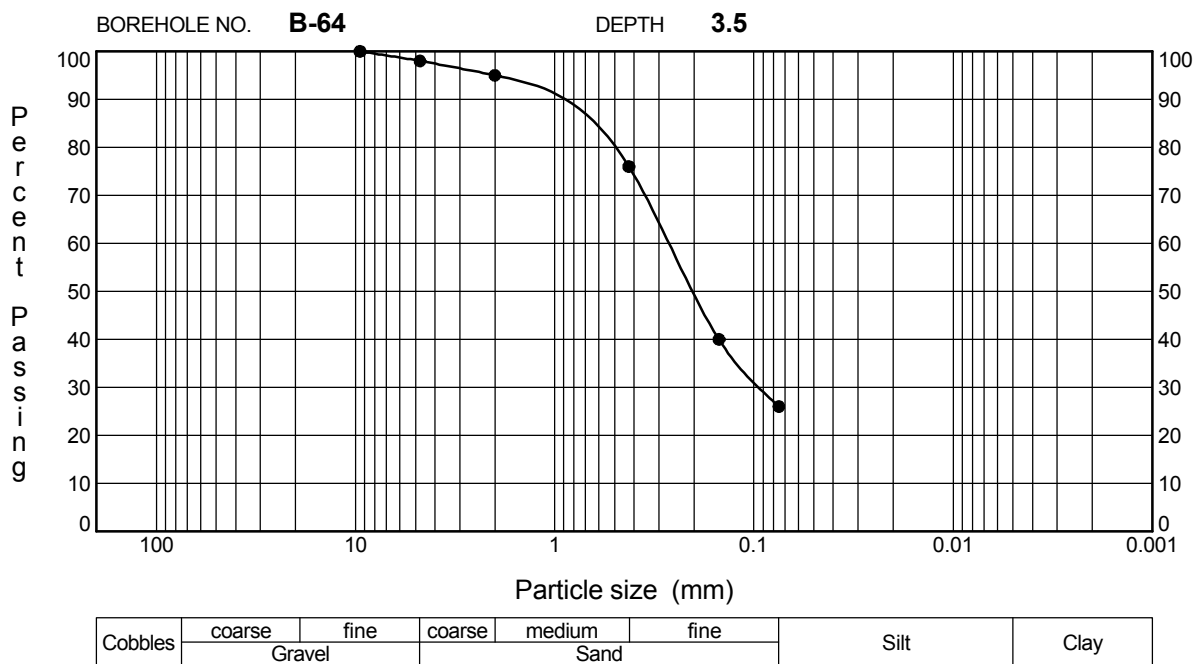
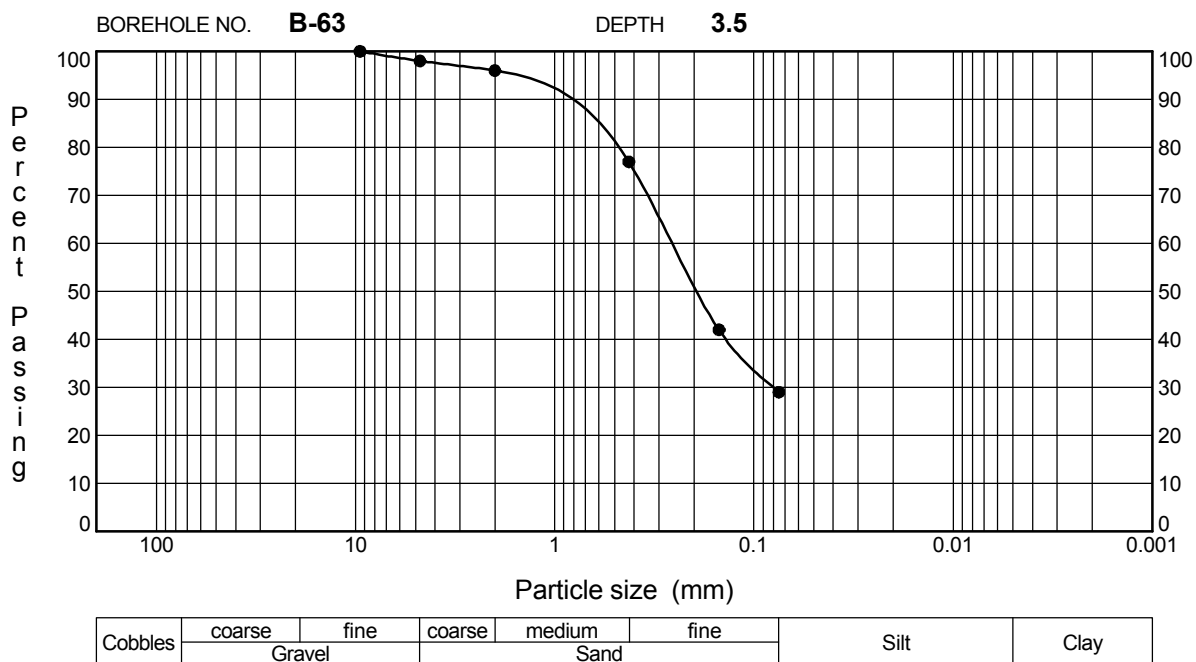
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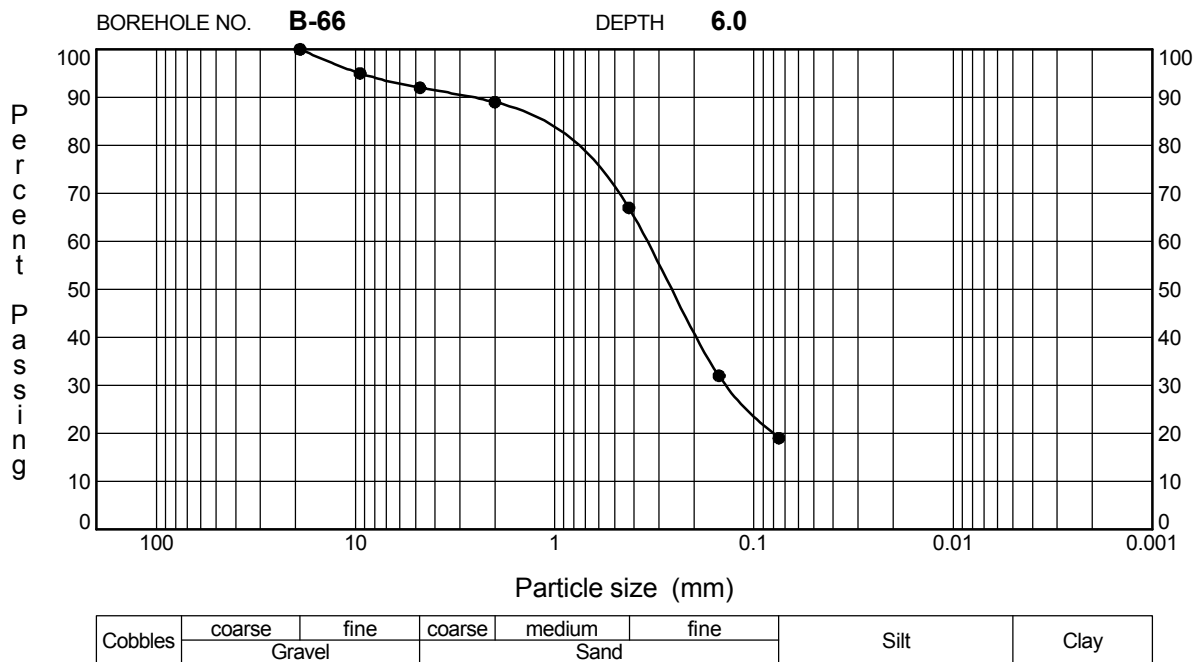
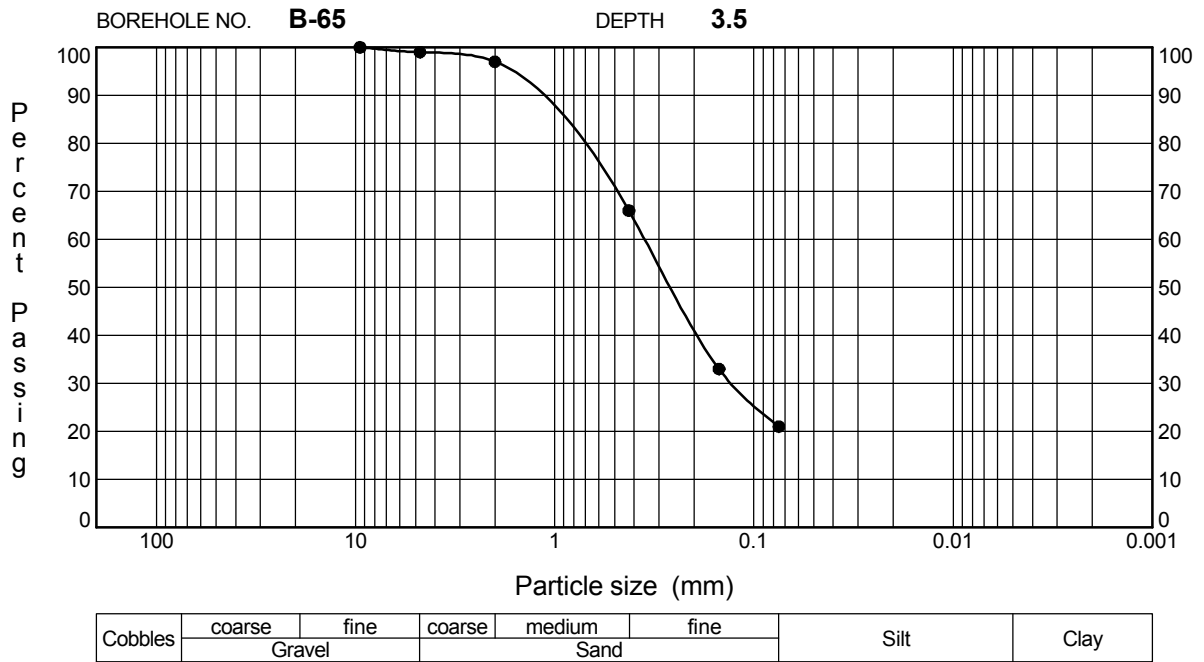
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 PROJECT: MO County Task Order # 13 Subtask B (Phase 3)
 SITE:
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GRAIN SIZE DISTRIBUTION

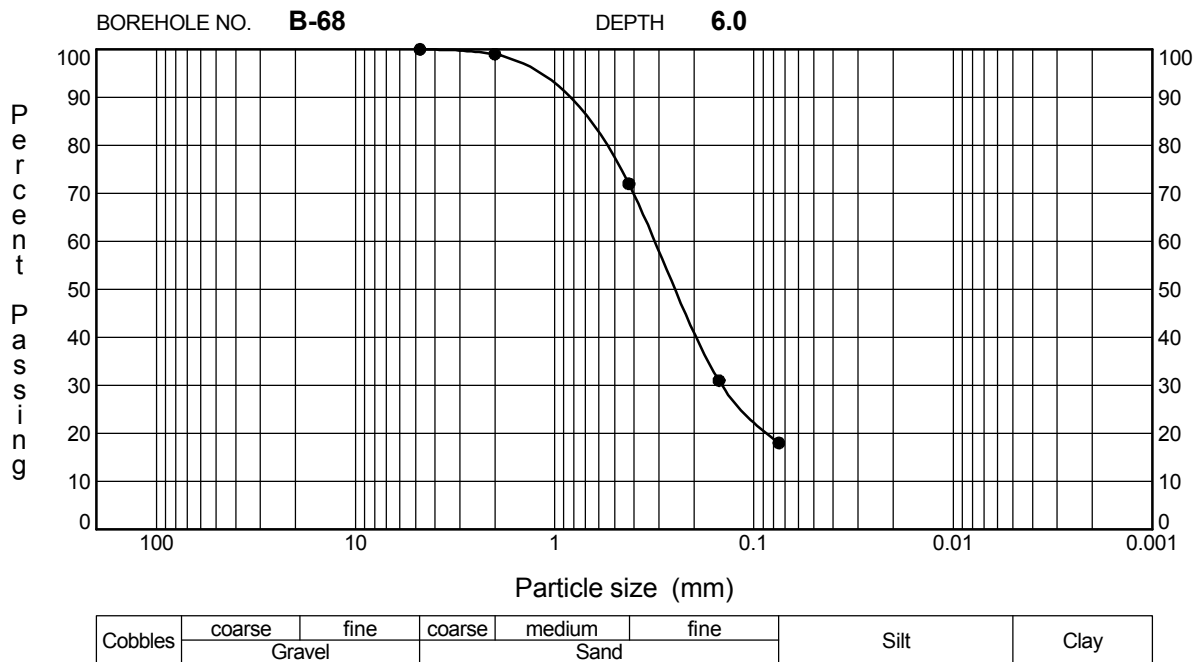
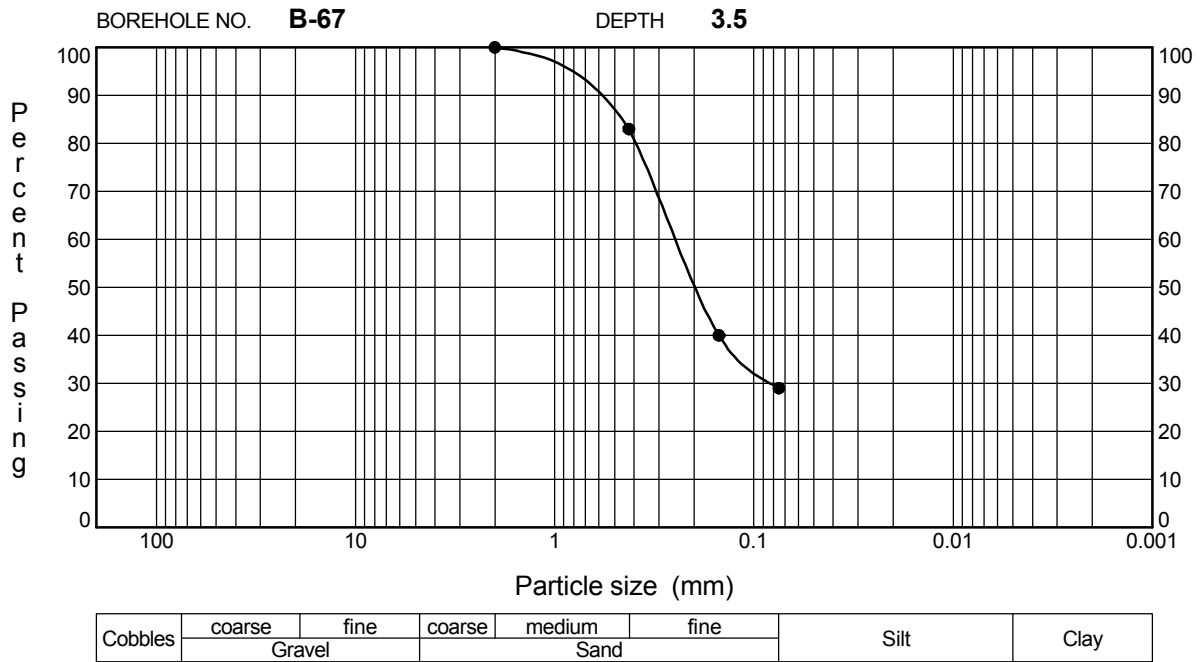
CLIENT: McCormick Taylor, Inc
 PROJECT NO.: 10-368.01
 PROJECT: MO County Task Order # 13 Subtask B (Phase 3)
 SITE:
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GRAIN SIZE DISTRIBUTION

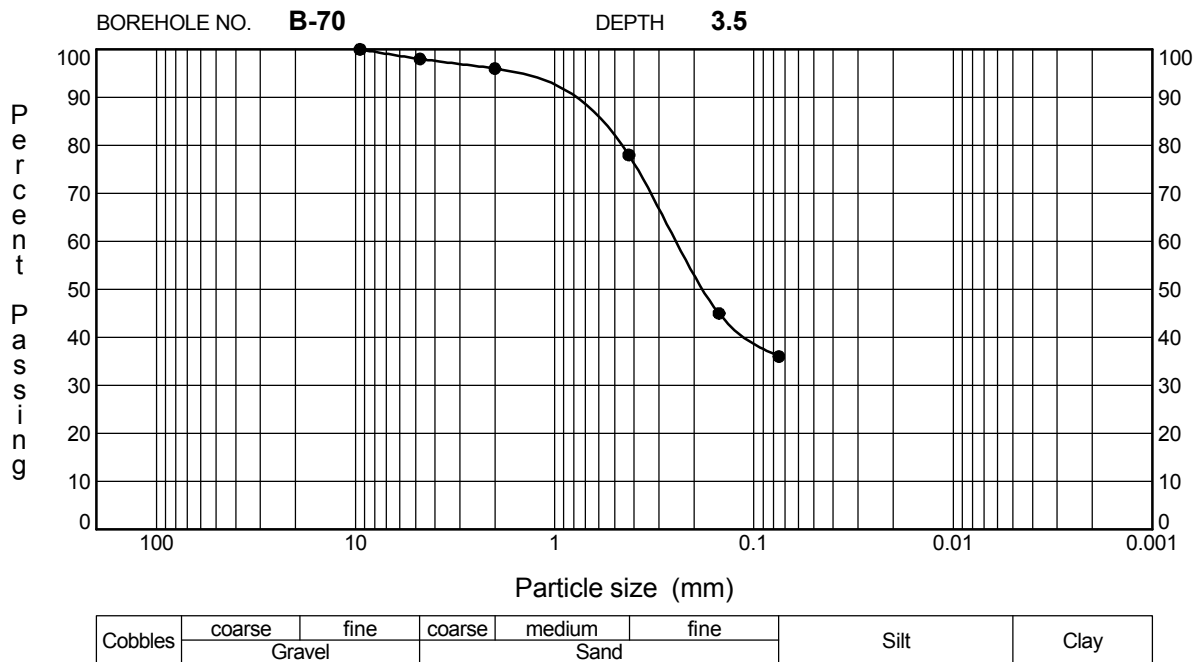
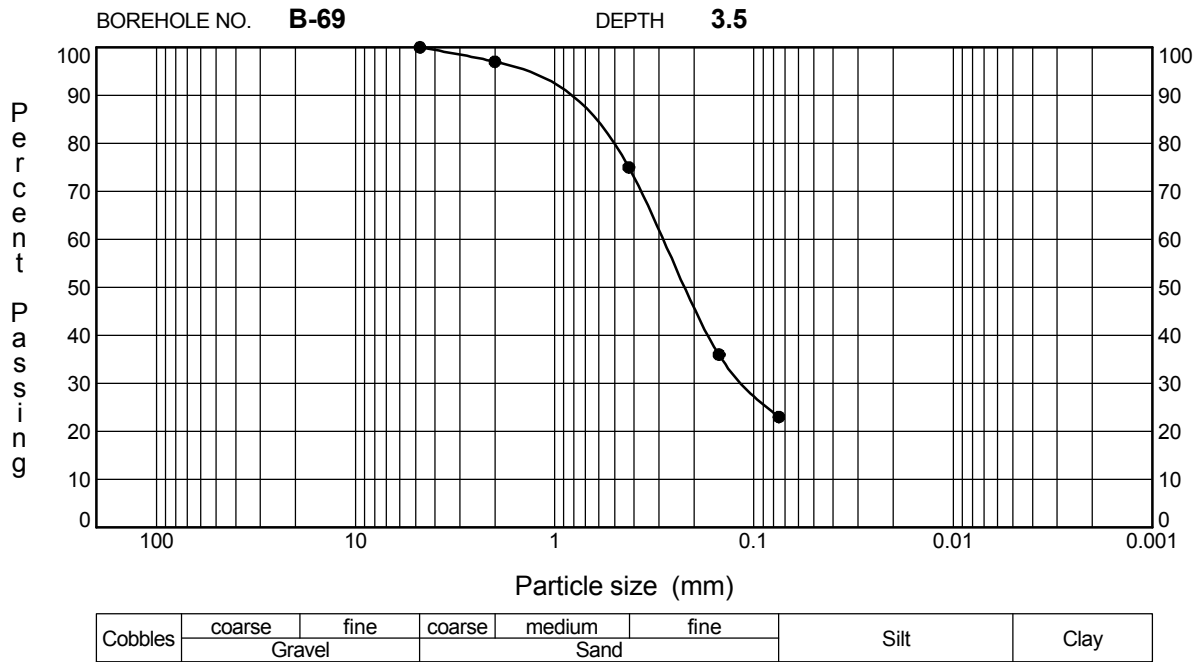
CLIENT: McCormick Taylor, Inc
 PROJECT NO.: 10-368.01
 PROJECT: MO County Task Order # 13 Subtask B (Phase 3)
 SITE: Franklin Knolls, Maryland



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GRAIN SIZE DISTRIBUTION

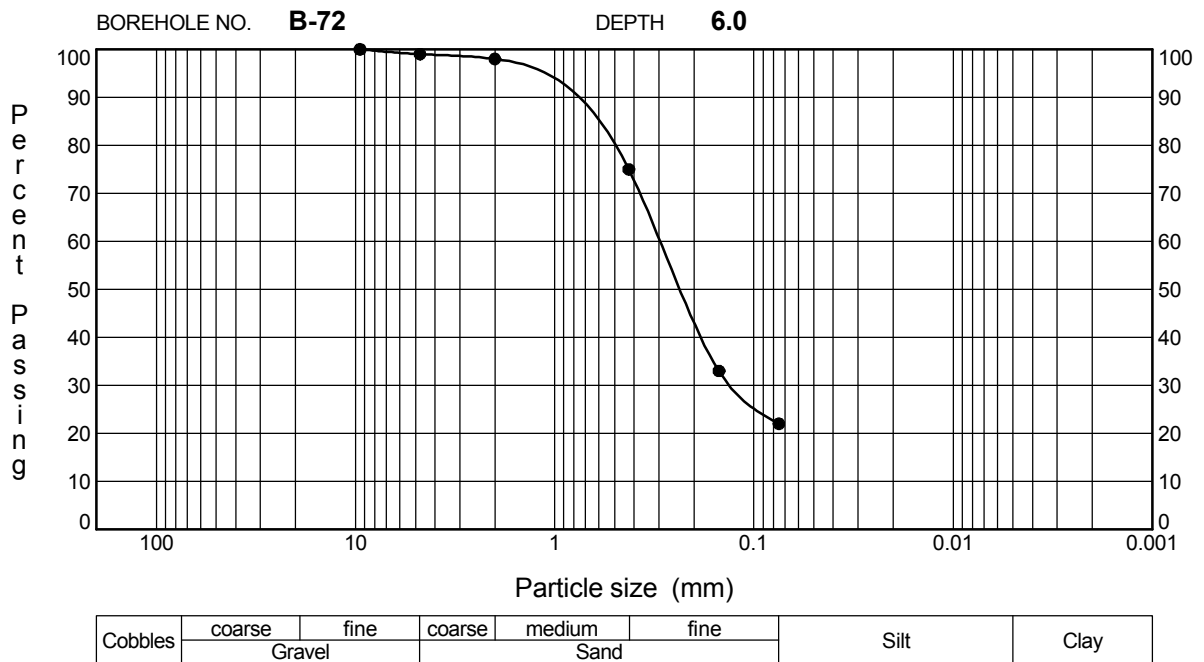
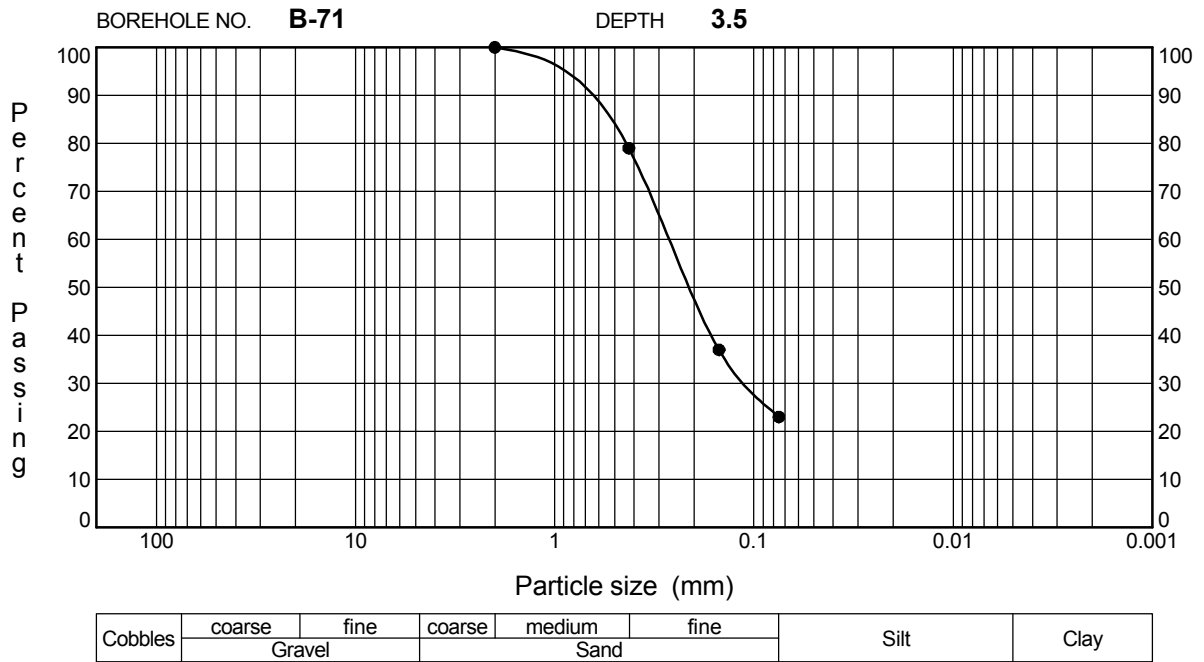
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 PROJECT NO.: 10-368.01
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GRAIN SIZE DISTRIBUTION

CLIENT: McCormick Taylor, Inc
 PROJECT NO.: 10-368.01
 PROJECT: MO County Task Order # 13 Subtask B (Phase 3)
 SITE:
 Franklin Knolls, Maryland



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GRAIN SIZE DISTRIBUTION

CLIENT: McCormick Taylor, Inc
 PROJECT NO.: 10-368.01
 PROJECT: MO County Task Order # 13 Subtask B (Phase 3)
 SITE: Franklin Knolls, Maryland

FIELD INFILTRATION TEST RESULTS

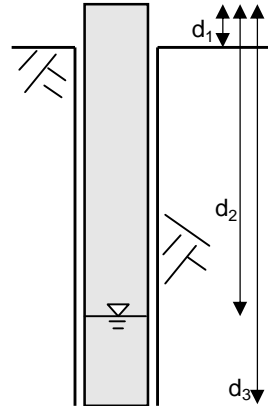
ON-SITE INFILTRATION TEST

JOB NO.: 10-368
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/4/2012

HOLE NO.: B-51
 HOLE DEPTH: 5.2 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/4/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/5/2012



Measurements (in.)

6

68 8/16

68 8/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:44	8:44	60	46 9/16	47 14/16	1.300	1.30
8:44	9:44	60	44 14/16	46 15/16	2.060	2.06
9:45	10:44	59	45 10/16	47 3/16	1.560	1.59
10:45	11:45	60	45 10/16	47 4/16	1.680	1.68

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.66 in./hr
 Recommended Infiltration Rate: 1.70 in./hr
 Report Reviewed and Prepared By: KC

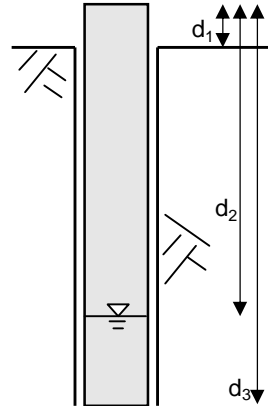
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/4/2012

HOLE NO.: B-52
 HOLE DEPTH: 5.4 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/4/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/5/2012



Measurements (in.)

6

50 6/16

70 13/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 20 6/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:53	8:53	60	27 6/16	27 9/16	0.200	0.20
8:53	9:52	59	27 2/16	27 6/16	0.240	0.24
9:52	10:52	60	25 7/16	25 9/16	0.120	0.12
10:52	11:52	60	25 9/16	25 11/16	0.120	0.12

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 0.17 in./hr
 Recommended Infiltration Rate: 0.20 in./hr
 Report Reviewed and Prepared By: KC

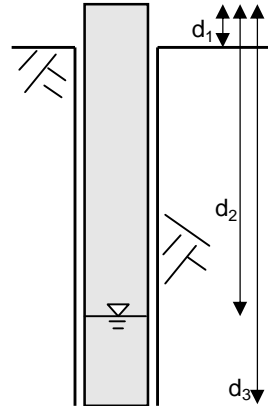
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/4/2012

HOLE NO.: B-53
 HOLE DEPTH: 5.2 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/4/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/5/2012



Measurements (in.)

7

49 7/16

69 10/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 20 3/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:01	9:00	59	26 8/16	27 1/16	0.540	0.55
9:00	10:00	60	26 8/16	27 1/16	0.540	0.54
10:02	11:02	60	26 6/16	27	0.600	0.60
11:03	12:03	60	24 13/16	25 6/16	0.560	0.56

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 0.56 in./hr
 Recommended Infiltration Rate: 0.50 in./hr
 Report Reviewed and Prepared By: KC

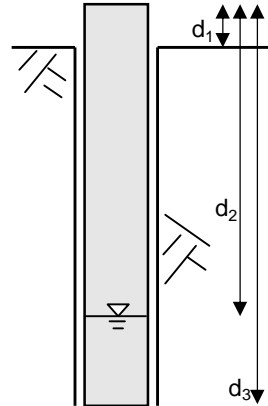
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/3/2012

HOLE NO.: B-54
 HOLE DEPTH: 5.2 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/3/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/4/2012



Measurements (in.)
 7 13/16
 59 13/16
 70 3/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 10 6/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:05	9:06	61	37 3/16	38 6/16	1.200	1.18
9:06	10:05	59	36	37 3/16	1.200	1.22
10:06	11:06	60	34 13/16	35 15/16	1.140	1.14
11:06	12:06	60	35 15/16	37 2/16	1.200	1.20

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.19 in./hr
 Recommended Infiltration Rate: 1.20 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

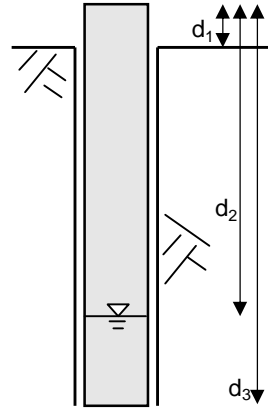
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/4/2012

HOLE NO.: B-55
 HOLE DEPTH: 5.3 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/4/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/5/2012



Measurements (in.)

6

51 2/16

69 10/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 18 8/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:07	9:10	63	28 15/16	29 8/16	0.600	0.57
9:11	10:11	60	27 6/16	27 12/16	0.360	0.36
10:12	11:12	60	26 6/16	26 12/16	0.360	0.36
11:12	12:10	58	26 12/16	27 4/16	0.460	0.48

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 0.44 in./hr
 Recommended Infiltration Rate: 0.40 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

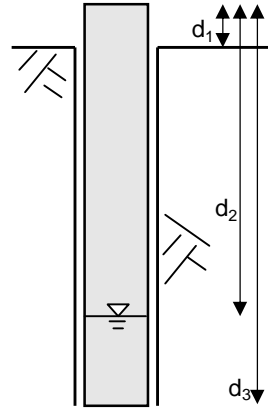
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/3/2012

HOLE NO.: B-56
 HOLE DEPTH: 5.0 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/3/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/4/2012



Measurements (in.)

8 3/16

51 13/16

68 12/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 16 15/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:37	8:36	59	29 6/16	30	0.600	0.61
8:37	9:36	59	27 10/16	28 3/16	0.600	0.61
9:36	10:36	60	25 13/16	26 6/16	0.600	0.60
10:36	11:36	60	26 6/16	26 15/16	0.520	0.52

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 0.59 in./hr
 Recommended Infiltration Rate: 0.60 in./hr
 Report Reviewed and Prepared By: KC

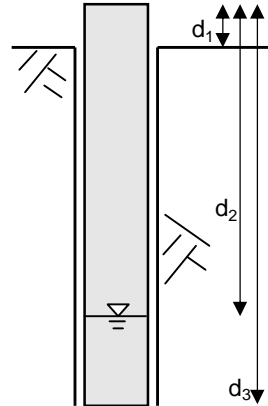
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/3/2012

HOLE NO.: B-57
 HOLE DEPTH: 5.4 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/3/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/4/2012



Measurements (in.)
 17
 74 8/16
 81 10/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 7 1/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:48	8:48	60	52 3/16	53 8/16	1.320	1.32
8:48	9:46	58	51	52 3/16	1.200	1.24
9:47	10:47	60	50 6/16	51 10/16	1.200	1.20
10:47	11:45	58	49 9/16	50 12/16	1.220	1.26

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.26 in./hr
 Recommended Infiltration Rate: 1.20 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

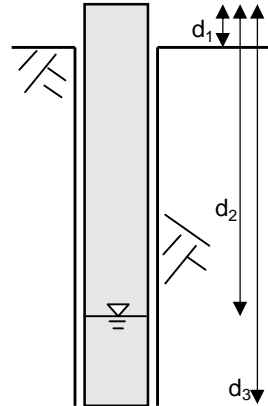
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/3/2012

HOLE NO.: B-58
 HOLE DEPTH: 5.3 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/3/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/4/2012



Measurements (in.)

18

73 11/16

81 10/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 7 15/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:56	8:55	59	50 8/16	51 12/16	1.200	1.22
8:56	9:54	58	48 12/16	49 13/16	1.080	1.12
9:54	10:54	60	47 10/16	48 13/16	1.200	1.20
10:54	11:55	61	48 13/16	50 1/16	1.200	1.18

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.18 in./hr
 Recommended Infiltration Rate: 1.20 in./hr
 Report Reviewed and Prepared By:

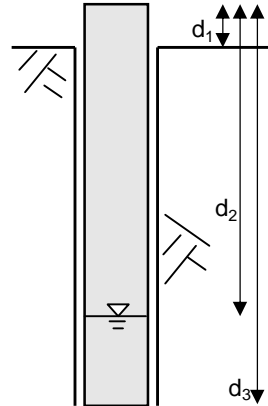
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/4/2012

HOLE NO.: B-59
 HOLE DEPTH: 5.2 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/4/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/5/2012



Measurements (in.)
 19
 73 13/16
 81 6/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 7 9/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:13	9:15	62	50 4/16	51 8/16	1.200	1.16
9:16	10:16	60	48 13/16	50 1/16	1.200	1.20
10:16	11:15	59	48 8/16	49 9/16	1.080	1.10
11:15	12:15	60	48	49 1/16	1.080	1.08

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.13 in./hr
 Recommended Infiltration Rate: 1.10 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

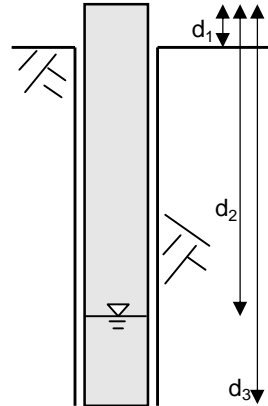
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 12/3/2012

HOLE NO.: B-60
 HOLE DEPTH: 5.3 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 12/3/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/4/2012



Measurements (in.)

6

59 4/16

69 4/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 9 15/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:27	8:27	60	36	37 1/16	1.080	1.08
8:28	9:28	60	34 5/16	35 6/16	1.080	1.08
9:29	10:29	60	32 12/16	33 13/16	1.080	1.08
10:29	11:29	60	31 7/16	32 8/16	1.080	1.08

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.08 in./hr
 Recommended Infiltration Rate: 1.00 in./hr
 Report Reviewed and Prepared By: KC

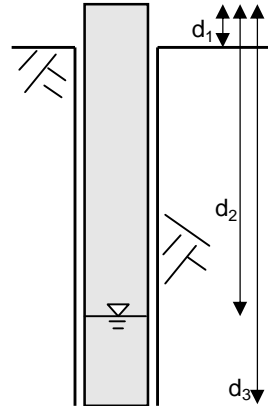
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/30/2012

HOLE NO.: B-61
 HOLE DEPTH: 5.4 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/30/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/1/2012



Measurements (in.)

5

69 10/16

69 10/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:27	10:28	61	46 13/16	50 1/16	3.240	3.19
10:30	11:30	60	46 3/16	48 13/16	2.600	2.60
11:31	12:31	60	46	48 8/16	2.500	2.50
12:32	1:33	61	45 2/16	47 13/16	2.700	2.66

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 2.74 in./hr
 Recommended Infiltration Rate: 2.70 in./hr
 Report Reviewed and Prepared By: KC

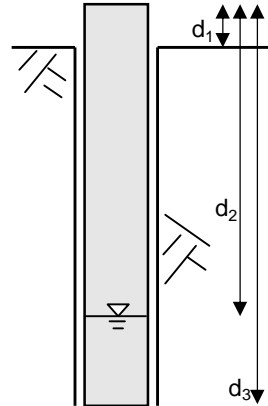
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/30/2012

HOLE NO.: B-62
 HOLE DEPTH: 4.7 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/30/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/1/2012



Measurements (in.)

6

61 13/16

61 13/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:35	10:34	59	40 8/16	41 10/16	1.100	1.12
10:36	10:34	58	39 11/16	40 11/16	1.000	1.03
11:35	12:35	60	39	40 2/16	1.100	1.10
12:36	1:40	64	38 3/16	39 6/16	1.200	1.13

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.09 in./hr
 Recommended Infiltration Rate: 1.10 in./hr
 Report Reviewed and Prepared By: KC

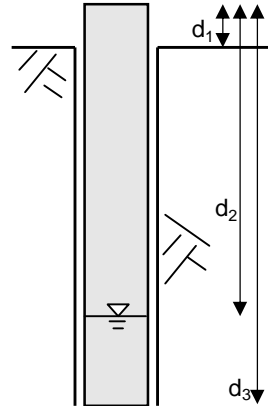
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/30/2012

HOLE NO.: B-63
 HOLE DEPTH: 4.9 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/30/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/1/2012



Measurements (in.)

7

45

66

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 21

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:41	10:40	59	24	24 3/16	0.200	0.20
10:41	11:40	59	23 5/16	23 10/16	0.300	0.31
11:41	12:40	59	22 11/16	23	0.300	0.31
12:41	1:42	61	23	23 5/16	0.300	0.30

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 0.28 in./hr
 Recommended Infiltration Rate: 0.30 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

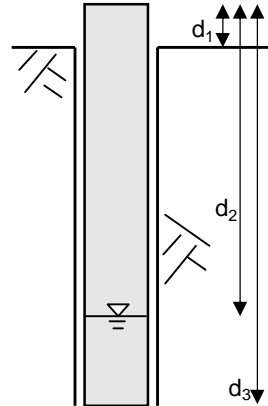
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/30/2012

HOLE NO.: B-64
 HOLE DEPTH: 5.0 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/30/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/1/2012



Measurements (in.)

18

78

78

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:20	10:18	58	55	57 2/16	2.100	2.17
10:20	11:20	60	54 3/16	56 10/16	2.400	2.40
11:21	12:19	58	54 5/16	55 11/16	1.400	1.45
12:20	1:20	60	53 3/16	54 11/16	1.500	1.50

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.88 in./hr
 Recommended Infiltration Rate: 1.90 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

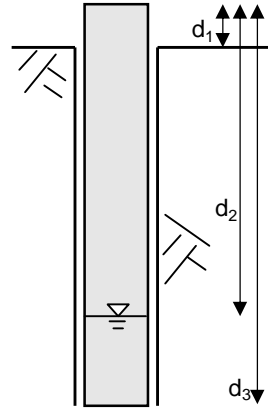
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/30/2012

HOLE NO.: B-65
 HOLE DEPTH: 5.0 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/30/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/1/2012



Measurements (in.)

17

77

77

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:13	10:12	59	56 2/16	58 2/16	2.025	2.06
10:14	11:12	58	55 13/16	57 10/16	1.800	1.86
11:13	12:13	60	54 11/16	56 5/16	1.600	1.60
12:14	1:16	62	53 3/16	54 14/16	1.700	1.65

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.79 in./hr
 Recommended Infiltration Rate: 1.80 in./hr
 Report Reviewed and Prepared By: KC

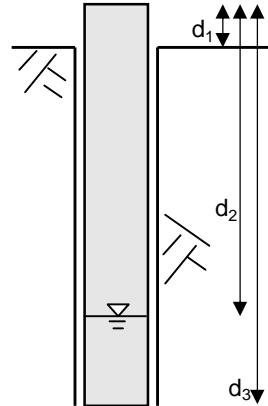
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/30/2012

HOLE NO.: B-66
 HOLE DEPTH: 4.6 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/30/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: AT
 TESTED DATE: 12/1/2012



Measurements (in.)
 8
 63
 63

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:02	10:06	64	40	41 13/16	1.800	1.69
10:06	11:02	56	39 6/16	40 5/16	0.900	0.96
11:03	12:04	61	38 10/16	39 10/16	1.000	0.98
12:05	1:06	61	37 6/16	38 6/16	1.000	0.98

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.15 in./hr
 Recommended Infiltration Rate: 1.00 in./hr
 Report Reviewed and Prepared By: KC

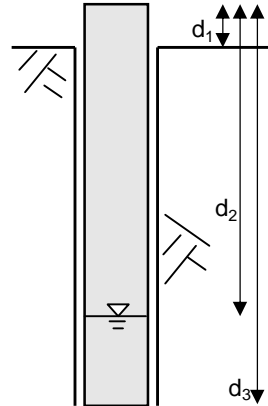
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Phase 1)
 LOCATION:

DRILLED BY: PS
 DATE: 11/20/2012

HOLE NO.: B-67
 HOLE DEPTH: 5.5 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/20/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: SP/FU
 TESTED DATE: 11/21/2012



Measurements (in.)
 12
 77 8/16
 77 8/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
10:50	11:50	60	52 11/16	54 4/16	1.560	1.56
11:51	12:51	60	52 3/16	53 14/16	1.680	1.68
12:52	1:52	60	52 11/16	54 6/16	1.680	1.68
1:53	2:53	60	51 15/16	53 6/16	1.440	1.44

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.59 in./hr
 Recommended Infiltration Rate: 1.60 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

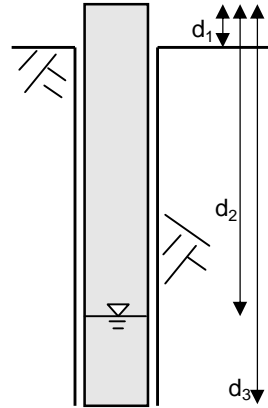
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/20/2012

HOLE NO.: B-68
 HOLE DEPTH: 5.5 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/20/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: SP/FU
 TESTED DATE: 11/21/2012



Measurements (in.)

12

78

78

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
10:57	11:57	60	51	52 9/16	1.560	1.56
11:58	12:58	60	50 8/16	52 1/16	1.560	1.56
12:59	1:59	60	50 14/16	52 3/16	1.320	1.32
2:00	3:00	60	51 4/16	52 9/16	1.320	1.32

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.44 in./hr
 Recommended Infiltration Rate: 1.40 in./hr
 Report Reviewed and Prepared By: KC

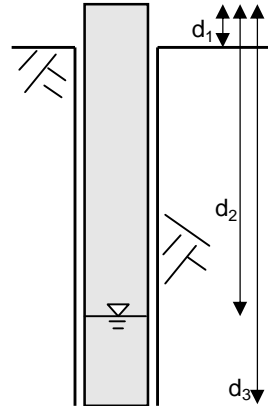
REMARKS:

ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/20/2012

HOLE NO.: B-69
 HOLE DEPTH: 5.4 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/20/2012
 PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: SP/FU
 TESTED DATE: 11/21/2012



Measurements (in.)
 6
 70 8/16
 70 8/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
11:05	12:05	60	40 11/16	41 12/16	1.080	1.08
12:06	1:06	60	39 6/16	40 9/16	1.200	1.20
1:07	2:07	60	39 2/16	40 5/16	1.190	1.19
2:08	3:08	60	38 14/16	40 1/16	1.200	1.20

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.17 in./hr
 Recommended Infiltration Rate: 1.20 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

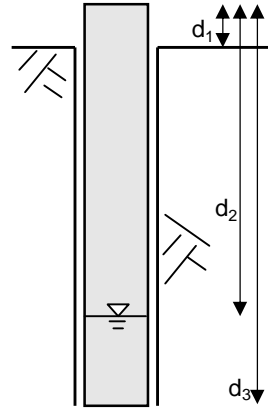
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/20/2012

HOLE NO.: B-70
 HOLE DEPTH: 5.4 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/20/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: SP/FU
 TESTED DATE: 11/21/2012



Measurements (in.)

6

45

70 8/16

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 25 8/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
11:10	12:10	60	19 7/16	20 1/16	0.600	0.60
12:10	1:10	60	20 1/16	20 10/16	0.578	0.58
1:10	2:10	60	20 10/16	21 4/16	0.600	0.60
2:10	3:10	60	21 4/16	21 13/16	0.600	0.60

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 0.59 in./hr
 Recommended Infiltration Rate: 0.60 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

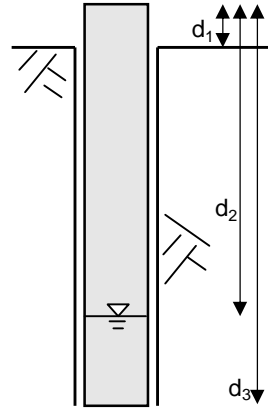
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/20/2012

HOLE NO.: B-71
 HOLE DEPTH: 5.2 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/20/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: SP/FU
 TESTED DATE: 11/21/2012



Measurements (in.)

8

70

70

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Elapsed	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
11:17	12:17	60	42 4/16	44 4/16	2.040	2.04
12:18	1:18	60	42 8/16	44 3/16	1.680	1.68
1:19	2:19	60	42 15/16	44 10/16	1.680	1.68
2:20	3:12	52	42 4/16	43 11/16	1.440	1.66

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.77 in./hr
 Recommended Infiltration Rate: 1.70 in./hr
 Report Reviewed and Prepared By: KC

REMARKS:

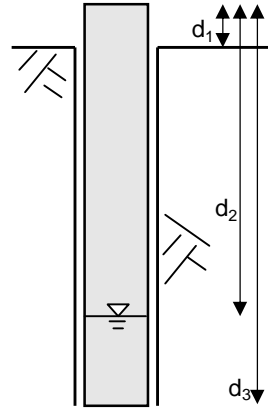
ON-SITE INFILTRATION TEST

JOB NO.: 10-368.01
 PROJECT: Mont Co Task Order#13 Subtask B (Pha
 LOCATION:

DRILLED BY: PS
 DATE: 11/20/2012

HOLE NO.: B-72
 HOLE DEPTH: 5.4 Feet
 HOLE DIAMETER: 8 Inch
 PRE-SOAK DATE: 11/20/2012

PIPE DIAMETER: 5 Inch
 PIPE MATERIAL: PVC
 TESTED BY: SP/FU
 TESTED DATE: 11/21/2012



Measurements (in.)

5 8/16

70

70

Pre-soak water remaining in the hole: Yes / No Depth: (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
11:23	12:23	60	42 12/16	44 6/16	1.680	1.68
12:24	1:24	60	42 6/16	43 13/16	1.440	1.44
1:25	2:25	60	42 13/16	44 4/16	1.440	1.44
2:26	3:26	60	41 14/16	43 5/16	1.440	1.44

NOTE: * Reading accuracy to 1/16"

Average of 4-hr Monitoring Period: 1.50 in./hr
 Recommended Infiltration Rate: 1.50 in./hr
 Report Reviewed and Prepared By: KC

REMARKS: